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Editorial

THE OPENING OF THE COLLEGES AND THE PROSPECTS OF THE STUDENT.

OCTOBER, being the commencement of the education sessional year, is always a time of interest for the student; and of late years, too, it has been a time of considerable anxiety for those Colleges whose existences depend largely upon the fees of pupils. The scope of veterinary science has always had its limitations, but of late years, owing to the advance of the motor, these limitations seem to have come more into the limelight than usual, with the result that parents with business instincts have severely dissuaded their sons from entering our profession.

There is, however, still plenty to do for those who like their work and are capable of carrying it out in a proper way. Even the private practitioner will admit that; and the only real grumble which comes to the top is the one, which has always been more or less present, that the fees are sometimes difficult to collect.

It is not so much, however, to private practice that the young graduate of to-day turns in his endeavour to make a living. The Public Health Services, under one guise or another, are at last offering berths which are worth consideration both from the scientific and the pecuniary aspects; and it is to them that the greater proportion of students turn nowadays upon receiving the diploma. Such posts give a settled income and certain more or less fixed hours, with the prospect of a pension at the finish; and it is to prepare men for this work that we must have specialists and men of authority who keep themselves abreast of the times amongst our teachers and examiners.

The favourable reception which the Public Health number of the VETERINARY JOURNAL has been given on all sides by the Press, lay as well as professional, shows that at length the general public are awakening to the fact that the veterinary surgeon has a definite place in the prophylaxis of diseases, of man as well as of animals, and that in certain spheres he is the only man to be relied upon to do the duty efficiently.

The *prevention* of disease is a greater work than its cure, and it is to this object that our attention will be drawn in the future to a much greater extent than has ever been done in the past.

Other nations have given us the lead in this matter, and it is quite time that our country too should waken up to a proper sense

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of its responsibility and to the knowledge that much of the loss which occurs amongst farm stock every year arises from preventable causes —causes which an efficient Veterinary Public Health Service will go far to mitigate, if not to do away with altogether.

General Articles

THE ABORTOSCOPE. A SIMPLE APPARATUS FOR THE DETECTION OF INFECTIOUS ABORTION OF CATTLE.

By Ll. E. W. BEVAN, M.R.C.V.S.,
Director of Veterinary Research, Southern Rhodesia.

INFECTIOUS abortion is recognised to be one of the most serious diseases of stock and the cause of enormous losses to the cattle industry in many parts of the world. In Great Britain it is regarded as second only in importance to tuberculosis, while in the United States of America " the exact financial loss cannot be even approximately estimated; but from the fact that the disease exists in all sections of the country, both in dairy and range cattle, it can safely be stated that the direct loss reaches into the millions, while the potential loss is likewise enormous and inestimable " (Mohler). In New Zealand " this disease is costing the colony annually from £200,000 to £300,000 per annum, an estimate based on the increased milk-yield which would result through its eradication " (Gilruth). Elsewhere the losses are equally disastrous.

The insidious nature of the disease, the frequent difficulty in detecting it until it is well established in a herd, and the absence of any satisfactory method of prevention or cure, render it one of the most difficult to control. Up to the present the efforts of state veterinarians and general practitioners have proved unavailing.

The existing methods of dealing with the disease are :—

(1) The disinfection of the animal which has aborted, her discharges and anything likely to have become infected by them. This treatment is merely palliative, it does not take into consideration the danger of the perpetuation of the disease by " carriers."

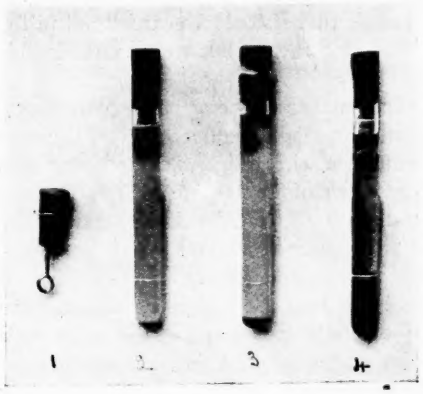
(2) Vaccine therapy, which aims at protecting susceptible animals in danger of infection. Several vaccines have been tried, with varying results.

(3) The isolation, segregation, or elimination of infected animals. This method depends upon the frequent application of the agglutination test.

None of the above methods, and no combination of them, has up

to the present proved entirely successful in eliminating the disease, probably because by the time measures are applied the infection has become too firmly established. It would appear, therefore, that in this disease, as in so many others, " prevention is better than cure " ; and just as modern and progressive stockmen aim at creating a " tubercle-free herd," so they should by means of the agglutination test endeavour to obtain an " abortion-free " one.

But the existing methods of applying the agglutination test for the detection of abortion in cattle are somewhat crude and associated with many difficulties, delay, and no little expense. The common method in practice is to secure the animal, and having " raised " the jugular vein by passing a cord round the base of the neck, to disinfect the site of the operation, and thereafter to collect with aseptic precautions a quantity of blood into a sterile syringe, and inject the same into a sterile bottle into which a sterile cork must be inserted. This blood is then despatched to a veterinary laboratory where the test is completed. Needless to say, under the conditions which usually obtain on the farm, or in the dairy, it is extremely difficult to attain that degree of sterility necessary if the blood is to arrive at the laboratory free from putrefaction or other changes. Thus a high percentage of specimens submitted are received in a condition unsuitable for the test.



(1) Cork and loop. (2) Tube containing suspension. (3) Negative result. The red cells have precipitated and the suspension is still opaque. (4) Positive result. The red cells and bacilli have fallen to the bottom of the tube: the supernatant fluid is water-clear, and the word *infected* can be clearly read.

These disadvantages were so marked in Southern Rhodesia, a country of long distances and slow transport, that in 1915 the writer invented the so-called " pipette method " described in the *Journal of Comparative Pathology and Therapeutics*, Vol. XXVIII, No. 4, December 1915, which consisted of the collection of blood from the ear into a piece of capillary glass tubing containing a small quantity of a solution which preserved the blood without affecting its agglu-

tinating properties. This method has since been used regularly, and many thousands of samples of blood have been taken and submitted for examination at the laboratory during the past ten years, the majority of which have arrived in a satisfactory condition. Indeed, it is rare to receive a sample which is not.

In 1921, however, at a meeting of veterinarians and medical men held in Salisbury on the 12th of November, 1921, the writer presented and demonstrated the use of the so-called "Abortoscope," which it is the object of this paper to describe. This simple apparatus, which was evolved from the old method, rendered the application of the agglutination test so simple that it could be carried out in the "field" without reference to the laboratory, but with a considerable degree of accuracy.

The apparatus consists of a small test-tube or phial, containing a suspension of the *Bacillus abortus* in a special diluent. This is closed by a cork into which is mounted a wire which extends downwards and terminates in a coiled loop, whereof the coils are sufficiently small and close together to exert capillary attraction and to gather the right quantity of blood for an agglutination test, that is to say, a dilution equivalent to one part of plasma to one hundred parts of suspension. It may be mentioned that the organisms used for the suspension have to be very carefully grown and tested as to their agglutinating powers, and are suspended in a solution which is so carefully adjusted that the whole blood can be used, thus obviating the separation of serum.

The method of using the apparatus is as follows:—

The tube is vigorously shaken until the word *infected*, printed on a label attached to the tube, can no longer be read through the contents. The suspected animal is then secured, and the margin of the ear is snipped with a pair of sharp scissors, or one of the veins of the ear is punctured with a needle, until the blood flows. The cork of the bottle is then withdrawn, and any liquid in the metallic loop is removed by blowing or shaking. The coils of the loop should be set slightly apart at an angle of about forty-five degrees. A drop of blood is then collected from the ear into the loop. This should form a globular bead about the size of a match-head, suspended in the loop.

The loop containing the blood is then inserted into the tube, which is carefully corked and vigorously shaken to completely mix the blood and the suspension. The tube is then placed in an upright position in a warm place for eighteen hours. If at the end of that time, or before, the word *infected* can be clearly read, that is to say, the solid contents of the tube have fallen to the bottom, leaving the

supernatant fluid water-clear, the animal may be regarded as infected with infectious abortion. If there remains any opacity, the result must be regarded as doubtful or negative, and a further test should be made. As the contents of the tube deteriorate with keeping, the test should be made within six months of issue.

In response to repeated requests, it has been decided to place this apparatus at the disposal of the members of the profession. The "Abortoscope" is now undergoing its trial and test in Great Britain, and if it proves satisfactory it will be demonstrated at meetings of veterinary and other associations. If it meets with approval, and any demands arise for it, arrangements can be made with a firm of druggists or instrument makers to issue it at a reasonable price.

It is not claimed that this simple means of applying the agglutination test is infallible, it is merely intended as a rough-and-ready method to use under field conditions. In important cases results can always be confirmed by more precise methods. It is hoped, however, that it may prove of use to the members of the profession by enabling them to test suspected animals themselves without delay and with a reasonable degree of accuracy, and so enable them to take appropriate steps for the control and elimination of the disease.

VETERINARY LEGISLATION IN EGYPT.

By D. S. RABAGLIATI, O.B.E., B.Sc., F.R.C.V.S., D.V.S.M.,
Late of the Egyptian Government Veterinary Service.

THERE are probably few if any other countries in the world where the legal position is so complex and intricate as in Egypt, a state of affairs brought about by the Capitulations, which give to each subject of a Capitulatory Power certain legal rights based on the laws of the country to which he or she belongs. Although this to some extent affects the carrying out of the veterinary regulations of the country, fortunately the great majority of European animal owners submit to the laws of Egypt which concern live-stock, without resort having to be made to the complicated machinery which can compel them to do so.

Veterinary legislation can be divided into two groups:

(1) Laws affecting the quarantine of animals newly imported from other countries, which are carried out by the International Quarantine Board.

(2) Laws affecting the animals of the country and those imported from abroad after having passed the quarantine stations. This

legislation is made solely by the Egyptian Government, whose officials have full control.

The Quarantine Service.—The International Quarantine Service is responsible for the laws and regulations relating to the admission of all human beings and animals entering the country. It consists of members nominated by the different countries having capitulatory rights in Egypt and also of certain other members chosen by and representing the Egyptian Government, the Director of the Veterinary Service being " ex officio " a representative. The President of this Board is a British medical man. The Board sets aside certain ports, where it has built animal quarantine parks, other than through which it is illegal for animals to enter the country. These parks are under the control of the Quarantine Service veterinary officers, men of different nationalities, who carry out the quarantine regulations of animals. Attention must be drawn to the exception which has been made in the case of the importation of cattle, sheep, and goats coming from the Soudan. These animals, entering Egypt at Wadi Halfa, are brought down from Halfa by river and are quarantined at Shellal, which station is under the authority of the Egyptian Government Veterinary Service, the Quarantine Board exerting no control in this case. The regulations concerning importation of animals were drawn up in 1896, and specify under what conditions they may be brought into Egypt, what length of quarantine is to be imposed, whether animals must be slaughtered at the port of entry or given a " free certificate," what countries are prohibited from sending animals to Egypt, and so on. The diseases specially named in these regulations are : Cattle plague, contagious pleuro-pneumonia of the ox, anthrax, foot-and-mouth disease, sheep-pox, glanders and farcy, swine fever, swine erysipelas and mange. Strangely enough, rabies is not mentioned, nor are dogs quarantined as a rule (probably because rabies is so prevalent in Egypt), but the Board has power to deal with any disease not specifically mentioned as it thinks fit.

Internal Veterinary Legislation.—The chief law under which animal diseases are dealt with, and which corresponds to the Contagious Diseases of Animals Acts of this country, is dated 1883. Its chief dispositions are as follows :

1. Making it illegal to transport animals which suffer from, or have been in contact with, animals suffering from certain diseases ; it defines a " suspected " animal and lays down measures to be taken in the case of an outbreak of disease, including its occurrence in markets or during transport. The regulations concerning disinfection are here prescribed.

2. The second part deals with the notification of disease which is

compulsory for those scheduled, to whom and how this must be carried out; authority is given for the slaughter of affected and "in-contact" animals under certain circumstances; and for compensation. It is to be noted that compensation is not paid in the case of actually infected animals, but only for "in-contacts" if it is necessary to slaughter these. Measures are also laid down for the disposal of carcases and offal.

3. The special diseases scheduled are cattle plague, anthrax, sheep-pox, glanders and farcy, contagious bovine pleuro-pneumonia, rabies, trichinosis of swine, foot-and-mouth disease, and mange.

4. Penalties for non-compliance with these regulations are given which vary from a fine of from one shilling to a pound or from two to seven days' imprisonment—manifestly ridiculously light punishments. On the other hand it is laid down that half the fines should be paid as a reward to anyone acting as "informer" against another party who does not report the outbreak of disease amongst his stock, or to a police official catching transgressors of these laws "red-handed." Rewards are also allowed for attendants of animals who report disease. These are, however, now more or less obsolete. The owner who is the first in a district to voluntarily notify the outbreak of disease may be granted full compensation, equal to the market value of his animals, not only for "in-contacts," but also for those actually affected.

Power is also given in this section to make decrees, altering or adding to this law.

In 1903 such a decree was promulgated which greatly increased the penalties for infringement of the laws in the case of cattle plague, and the maximum penalty that can now be inflicted was laid down as £100 fine or six months' imprisonment, or both. In 1905 a decree was enacted extending the powers of the veterinary authority in the case of rabies, whereby all dogs or other animals which bite a human being or even another animal, or those animals bitten by a suspectedly rabid animal, must be isolated in specially constructed cages or premises under the direct observation of the veterinary official, until diagnosis can be confirmed or proved negative. Power was also given to enforce the muzzling of all dogs in public places, if thought necessary.

Epizootic lymphangitis has latterly been scheduled, and power now exists to isolate all horses, asses, and mules suffering from or suspected of suffering from this disease, until cured or proved negative; but destruction is not permitted without the owner's consent.

The veterinary authority used to be vested in the Public Health Department, but it has now been transferred to the Minister of

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Agriculture, who acts on the advice of the Director of the Veterinary Service of his Ministry—that is, the Government Veterinary Service.

In 1913 a law was brought in for controlling the trade in cattle, sheep, and goats, and hides coming from the Soudan via Shellal. The quarantine parks at Shellal are entirely under the control of the Veterinary Service of the Ministry of Agriculture, as before stated. Cattle, after undergoing their prescribed period of quarantine, are only allowed through into Egypt for slaughter either in Cairo or Alexandria abattoirs. They are brought down in special trains accompanied by "super-cargoes," native cattle not being allowed to join these trains nor to come into contact with them *en route* in any way. Sheep and goats, after their prescribed detention in the quarantine parks, are given a "free certificate."

Laws Dealing with Meat.—The control of meat in Egypt is entirely in the hands of the Veterinary Service—in fact, the veterinary surgeon holds the position in regard to meat inspection to which he is justly entitled. No private abattoirs are allowed, and all animals slaughtered for meat for human consumption must be killed in a public abattoir where one exists, or, failing this, in a place specially set apart in a village for this purpose. All the more important towns have well equipped abattoirs belonging to the municipalities, and in the smaller ones there is often an abattoir in the public market where slaughtering takes place on certain days in the week, when it is the duty of the veterinary inspector to attend if possible. It is illegal to expose meat for sale not killed as prescribed, and as meat-stamping is the usual custom, meat killed outside is easily recognised, despite the frequent endeavours to falsify the stamps. It is the duty of the veterinary inspector to examine all animals before slaughter, and as a rule this practice is carried out as far as possible. The veterinary inspector can detain any animal he suspects to be unfit for slaughter until such time as he is satisfied that it is not suffering from a contagious disease.

The larger cities, such as Cairo and Alexandria, have a special veterinary staff at the abattoirs, and the Government or municipal veterinary officers control the smaller ones, of which they are usually in full charge. No non-qualified man has any right to condemn meat. Where it is impossible for the veterinary inspector to be present at the time of slaughter, the lay inspector detains any suspected carcase until the veterinary surgeon can see it. The meat regulations in force lay down rules for the hygienic and smooth working of the abattoirs. The inspection of meat in the butchers' shops is part of the work of the veterinary officer or of a lay inspector of his service, where there happens to be one, although there are not very many of

these. The latter can only detain meat and bring it to the notice of the veterinary official, who has power to condemn it. The granting of licences for butchers' shops is the duty of the medical and not the veterinary officer. The veterinary inspector has the right to prohibit anyone from working in an abattoir if he has reasonable grounds for suspecting him to be suffering from a contagious disease, until a medical examination can be carried out by the medical officer.

All meat must be removed from the abattoirs in covered vans, and in some towns, notably in Alexandria and Cairo, these vans are very good and well constructed. Meat exposed for sale must be covered up by means of cloths, but of course this cannot always be enforced in the smaller villages. It is not intended to convey the idea that in a country like Egypt it is possible to enforce all regulations to the letter of the law, but a great deal depends upon the efficiency, tact, and zeal of the veterinary officer. There is no method actually laid down as to system of inspection in the abattoirs, but meat inspection is taught in the Veterinary School, and usually well carried out in practice on fairly up-to-date lines.

At one time all abattoirs were erected and controlled by the Government, but of late years most have been handed over to the various municipalities as part of a general scheme to develop local government. Some municipalities employ a whole time veterinary surgeon, while others have their work carried out by the Government veterinarian of the locality.

Owing to a falling off in the number of cattle as shown by the cattle census, a law was promulgated in 1912 which made it illegal to slaughter any calves or heifers which had not cut their central permanent incisor teeth. This only applies to native animals and not to imported ones, although the latter are exceedingly rare. The law has been carried out as far as has been possible, and anyone found killing such an animal under age has been prosecuted. The entry of Soudanese cattle into the country has probably done more to prevent the promiscuous slaughter of cattle which might be more profitably kept for breeding purposes than the above-named law.

As regards the carrying out of the laws relating to outbreaks of scheduled diseases, the veterinary inspector has power with the aid of the police to enter the premises of any Egyptian subject to inspect his animals, and can, for example, inject mallein or inoculate cattle against cattle plague when necessary, but he cannot, even with police assistance, enter the property of any European against the wishes of the individual concerned unless a representative of the consulate to which such subject belongs is present. This is often

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very troublesome, and the inspections may be rendered difficult or even abortive if the European owner wishes to obstruct.

The veterinary inspector is always called in in medico-legal or criminal cases where animals are concerned, and his certificate is usually—as it certainly ought to be—accepted.

Legislation in Regard to Milk.—In Egypt practically nothing has been done to improve the milk supply, and here the veterinary profession certainly has not "come into its own." Licences for the construction or registration of cow-sheds are granted and controlled by the medical officer or sanitary inspector, but there is no veterinary inspection of milk cows or milking buffaloes at all.

Laws are in force regulating the course of the Veterinary School, of which there is only one in Egypt, and authorising the formation of a school council, who superintend the curriculum. A licence to practise as a veterinary surgeon, even with the veterinary diploma granted by the Egyptian School, can only be obtained from the Public Health Department on the payment of a nominal fee. Only graduates of this school or those holding certificates or diplomas from recognised European or other veterinary colleges are granted licences. Although the unqualified practitioner may and does exist, he has no legal status, and is liable to prosecution—at least according to law.

It is impossible, in the very limited space to which I have been restricted, to give more than the merest outline of the subject, but I think it can be claimed that legally the Egyptian veterinary surgeon is well recognised and a very useful member of society. It is, however, to be hoped that as time goes on his position and standing will be still more extended, as is the most ardent desire of all our professional brothers in Egypt, and which the profession well deserves.

THE PIG AND HUMAN DISEASE.

By THOMAS W. M. CAMERON, M.A., B.Sc., Ph.D., M.R.C.V.S.

Among the domesticated animals, after cattle, pigs are most frequently affected with *Tuberculosis*, which seems to be usually contracted from cows' milk, and is accordingly generally of the bovine type. However, both human and avian strains are sometimes found; but these are more frequently localised than the bovine form, which rapidly becomes generalised in pigs and often attacks the bones. Unless a strict system of meat inspection in enforced, there is a considerable danger, not only from uncooked and undercooked pork, but from contamination of other articles of food by the pork. It is

now realised that even the bovine strain is very dangerous to children, and it is claimed that about half of the cases of primary abdominal tuberculosis in children are due to this form. Meat, of course, does not lend itself with the same facility to the transmission of the disease as does milk; but its possibilities in this respect are by no means negligible.

Aphthous fever, or foot-and-mouth disease, is almost as serious a condition in pigs as in cattle, but as the disease in man is dangerous only in children, to whom it is conveyed by cows' milk, it is probable that the pig is not an important factor in its transmission to human beings. The fact, however, must be borne in mind that man may be infected through handling the animals.

Variola suilla, or swine pox, is a rare, though serious, disease in pigs, said to be contracted from, and transmissible to, man. It is very contagious and causes fairly high mortality, but it must not be confused with swine erysipelas, which is a distinct disease (in no way related to human erysipelas). Swine pox occurs in Europe and is said to have been present in England.

Swine erysipelas is a contagious disease in pigs, which is widely distributed throughout this country. It is due to the *Bacillus rhusiopathiæ*—an organism closely allied to or identical with the bacillus of mouse septicæmia. A number of cases are on record of men who were engaged in handling infected pigs contracting the disease—one of the inspectors of the Ministry of Agriculture has been infected on three occasions in this way. It is not definitely known whether the bacillus may enter the unbroken skin or whether slight abrasions are necessary. There is a slight but very painful cellulitis with a distinct line of demarcation. The neighbouring lymph glands are usually swollen, and there may be exfoliation of the epidermis. The disease usually terminates within a month. In the pig, there are frequently serious heart lesions, but it is unknown if such effects are produced in man.

Anthrax, primarily a disease of herbivores, is also found in swine, although these animals are relatively insusceptible.

Rabies also occurs in pigs, although by no means so commonly as in carnivores, and when one considers the large canine teeth and the pugnacious disposition of the boar, it must be counted as a serious danger to man and other animals.

Actinomycosis is also found in this animal, but there is no authentic evidence that this disease has ever been transmitted from animals to man.

While the living pig can transmit many bacterial diseases, its flesh may also be a serious danger. Pork and beef are the most

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common sources of meat poisoning. Meat may be rendered poisonous in several ways—through contamination by the butcher from fæcal material, by the post-mortem or ante-mortem invasion of the tissue by bacteria, or by infection subsequent to its leaving the hands of the butcher. It is important to remember that many organisms of the coli-typhoid group found in man are normally present in the intestine of the pig, and that in the very common disease of swine fever, one of these organisms (*Bacillus suipestifer*) is so frequently present in the blood and tissues that it is called the "swine fever bacillus." It is now accepted that the cause of this disease is a filterable virus, and that the bacterium is a secondary invader. If the pigs in the early pre-clinical stages of the disease are slaughtered, the bacillus may be already in the tissues, and it is at this stage that the animals are frequently killed in order to minimise financial loss. The meat-poisoning bacilli are generally accepted to be *B. enteritidis gaertner* and *aertrycke*, the latter being probably identical with *B. suipestifer*. *B. paratyphosus* is believed not to be a meat-poisoning bacillus. Meat poisoning in Europe, due to *B. aertrycke*, is more frequently associated with the consumption of raw or partly raw pork, than with any other form of meat.

In addition to ante-mortem infection of tissue, it is easily seen that pork may be infected by the butcher with fæcal material, and the practice of not skinning the animal before cooking, so common in this country, increases the danger. If the viscera are left too long in the carcase, especially in hot weather, the danger of meat being infected through migrations from the intestine is obvious.

In most cases of meat poisoning the meat has been obtained by emergency slaughter, i.e. the animal suffering from an untreatable disease is killed in order to save as much as possible. This practice must always be regarded with the deepest suspicion, but must not be confused with slaughter because of accidents, which is on account of a recent and afebrile condition and belongs to a different category. Strict supervision by skilled meat inspectors has done much to prevent trouble from this source in Britain, but there is considerable slackness in some districts.

Bacillus botulinus is the cause of a more serious form of meat poisoning. It is an anaërobe and causes a profound systemic toxæmia rather than a gastro-enteric irritation. Pigs are naturally very resistant to botulism, but are by no means immune to it. The organism has been isolated on several occasions from the intestine of the normal pig and elsewhere, and for this reason pork, including ham, is an important, although by no means the sole, source of the disease in man. It is more frequently associated with preserved

pork than with the fresh material, and sausages, salted pork, and ham are peculiarly fitted to act as culture media for the bacillus which produces a very powerful toxin. It is this which is so dangerous to the consumer. Tinned pork and tinned sausages may also be infected, and though "sterilised" at a temperature sufficiently high to kill the bacilli, this temperature may not have been high enough to destroy the toxin.

The gas gangrene group of organisms are well represented in the intestine of the pig, as in all the domestic animals; and although little attention has been paid to their effect on this animal, they appear to exert but slight pathogenicity. It is not, of course, suggested that man is liable to be infected by the pig, but their occurrence is of interest.

On the ground of the animal parasites, an even more formidable indictment may be drawn up.

Balantidium coli is a normally non-pathogenic ciliate commonly found in the intestine of the pig, and is the cause of a serious form of dysentery in man. The parasite is excreted in its cystic form and ingested by man with food or water contaminated by pig fæces. Apparently cysts are not excreted by man, who is therefore incapable of spreading the disease, which must in every case originate with the pig.

Among the ecto-parasites of the pig transmissible to man is the porcine variety of *Sarcoptes scabiei*, a parasite which is more common abroad than in this country. The pig is also an occasional host of *Pulex irritans*, the human flea; but so far as man is concerned, its most formidable ecto-parasite is *Tunga penetrans*, the "jigger," a flea producing sores in the feet and legs of man in the tropics. The parasite is normally found on pigs, but occurs on other animals as well. The female of the species, after fertilisation, seeks the skin of an animal, burrows into it, and there becomes embedded in an inflammatory pocket with the posterior region of her abdomen projecting. She swells to the size of a pea, and passes numerous eggs to the exterior. The inflammation may lead to ulceration or even gangrene and loss of the affected part. When all the eggs are deposited the female dies and shrivels up. Control can at best be incomplete when man alone is treated.

It is altogether outside the scope of this paper to make a detailed study of all the entomological questions which concern man and the pig. There are two points, however, which are important from our point of view. In the first place, the pig, in common with the domestic herbivores, may sometimes be very useful as a counter-attraction for insects, such as mosquitoes, which not only prove irritating to man,

but are capable of infecting him with protozoon parasites. Secondly, there is a certain resemblance between the insect and arachnid endoparasites of both animals. Little is known about myiasis in the pig, and not very much about the subject in man. Both, however, unlike the herbivores, have no specific œstrid parasites, such as bots, warbles, and nostril-flies. *Dermatobia hominis*, the "macaw worm," is really a parasite of cattle, only occasionally found in man. Man and pigs may, however, occasionally be parasitised by larvæ of other flies. For example, the rat-tailed larvæ of *Eristalis tenax* have been reported from the human gastro-intestinal tract in some twenty cases. I am able to record a similar case from the pig from Scotland. The larvæ, which breed in dirty water, on this occasion were found in the stomach, where they had caused a fatal gastritis. Other cases have probably occurred, but have been overlooked.

The so-called tongue-worm of the dog (*Linguatula rhinaria*), which is really a degenerate arachnid, is occasionally found in both pigs and man. The parasite lives in the nasal cavity of the dog, and the eggs deposited by the female pass to the exterior and are swallowed by some suitable intermediate host—man, pig, or some other animal—in the stomach of which the embryo hatches. Passing through the intestinal wall, it encysts in some organ. The resulting larva ultimately leaves this resting-place and migrates to one of the body cavities, causing more or less damage *en route*, which sometimes even results in the death of the host. The method by which the larva reaches the dog and develops into its adult form is unknown. The adult as well as the larval form occasionally occurs in man, and presumably man is liable to be infected from the pig and other intermediate hosts as well as from the dog. The parasite is widely distributed, and is probably much more common than is generally supposed.

Helminths.—A large variety of helminth parasites is common to both hosts. No flukes of the domestic animals can be transmitted directly to man, as in every case at least one intermediate host is necessary. But the pig acts as a definitive host for a number of these parasites; and in a campaign for their eradication from an area the pig must be borne in mind.

Several species of the genus *Paragonimus* have been noted in the lungs of pigs in Asia and America, but it is difficult to say to which of the four recognised species they should be referred. It is probable that both man and the pig are infected by all four.

Among the liver flukes of the pig, we find *Fasciola hepatica*, occasionally found in man, and *Clonorchis sinensis*, a very common human fluke in Asia. *Dicrocœlium dentriticum*, a not uncommon

liver fluke of sheep and other ruminants, is sometimes found in man and the pig.

Metagonimus ovatus, a small heterophyid fluke, and *Schistosoma japonicum*, one of the blood flukes, also occur in both hosts.

In the intestine of swine occur *Gastrodiscoides hominis* and *Fasciolopsis buskii*. The former, a small amphistome, is a normal parasite of the pig in Asia and an abnormal one in man. The latter, a large fluke very similar to the common liver fluke in external appearance, is also a swine parasite which lives exceptionally in man, in whom it is decidedly pathogenic.

The armed tapeworm of man—*Tænia solium*—which, fortunately, is becoming more uncommon, finds its intermediate host in the pig, in which it causes a condition known as "measles of pork." The intermediate stage, *Cysticercus cellulosæ*, is fairly resistant to cold, and may be found alive in frozen pork. It is of course destroyed by thorough cooking.

It is of passing interest to note that the hydatid stage of *Echinococcus granulosus* is common in the liver of the pig. The adult worm is of course confined to carnivores; but the hydatid occurs in man, and although he cannot be infected directly by the pig, the presence of the cystic stage in that animal has an important bearing on prophylactic measures. Unless destroyed, the hydatid may be swallowed by a dog or some such animal, and the parasites reaching maturity in that host are ready to infect man.

The common worm of the pig in all countries is a species of Ascaris morphologically identical with *Ascaris lumbricoides* of man. It is generally accepted that it does not form a separate species, but it has recently been suggested that human and porcine strains exist. This question is still *sub judice*, and in the meantime the pig should be considered as a potential source of infection to man. Infection with Ascaris is caused by swallowing ova containing infective embryos, and contamination of garden produce can easily be caused by pigs.

Another important human worm, *Necator americanus*, may also be found in the pig. At least forms almost indistinguishable from the human forms have been reported.

Ackert and Payne have found experimentally that normal human hookworm eggs ingested by pigs were able to hatch and develop into infective larvæ in the fæces passed by the pig. It is obvious, therefore, that, apart from the possibility of his being a host for the adult forms, the pig is an important disseminator of hookworm to man, and it would be wise to take cognisance of the pig in all schemes for the eradication of the disease, as even if he cannot harbour the adult he is capable of transporting ova of human origin from open

latrines to fields and ponds where development may take place and new human hosts may be infected.

Another nematode found in man and carried by the pig is *Trichinella spiralis*. This worm is normally found in rodents, and is acquired by the pig through eating infected rats and mice, or even other pigs. The worms reach maturity in the intestine, but the larva leaves this habitat as a rule, and finds a lodging-place in the muscles of the pig, where it encysts. However, the fæces as well as the flesh of swine infected with *Trichinella* are infective for other animals—a fact of some importance, as it largely increases the chance of infection of man and other animals by contamination of foodstuffs. Man is infected through eating improperly cooked pork or food thus contaminated. The presence of this worm in pork necessitates a strict system of meat inspection—in some countries a special staff is employed to search for this parasite alone—and owing to rigid methods of control the disease is rapidly decreasing.

Strongyloides stercoralis, a parasite of man associated with diarrhœa and enteritis in that host, has recently been recovered from pigs in Trinidad. The pigs were infected from human fæces, so that there can be no doubt of the validity of the species.

Metastrongylus elongatus, a thread-like strongyle worm commonly occurring in the lungs of the pig in all parts of the world, has been found in man, but it is not a common parasite in that host. *Mecistocirrus digitatus*, a related worm from the intestine of ruminants and the pig in Asia, has also been reported from man on one occasion, under circumstances, however, not altogether free from doubt.

Dioctophyme renale (*Eustrongylus visceralis*), a somewhat larger nematode parasitic in the kidney of the dog, has been noted from a similar habitat in both man and the pig—a report of scientific rather than practical interest.

Gnathostoma hispidum, the spiny stomach-worm of pigs, has recently been reported in man. In this host, however, it was found in an abnormal position, i.e. subcutaneously, where it was the cause of a " creeping disease."

The thorny-headed worm of swine, *Macracanthorhynchus hirudinaceus* (*Echinorhynchus gigas*) has been reported as present in man ; but if the reports are correct, infection could only have been caused by eating the intermediate host—cockchafers and other beetles. The occasional occurrence of this practice among human beings, intentionally as well as unintentionally, attaches a certain amount of plausibility to the reports.

It will be seen that a large number of human diseases are intimately connected with the pig. Some of these exist through the mistaken

idea that a pig likes filth. It has been demonstrated that it pays to keep these animals under clean sanitary conditions, just as it pays with all other animals. Others have resulted through an undue intimacy between pig and man, particularly in peasant communities. Still others have been caused by extreme carelessness in the disposal of infective offal.

Prophylaxis is simple and obvious—attention to the usual principles of hygiene with extreme care to prevent access to human excreta, will do much to eradicate these diseases from the pig and prevent their spread to man. The practice of eating pork overcooked, almost universal in this country, has probably done much to eliminate *Tænia solium* and *Trichinella spiralis* and to reduce the chances of infection with tuberculosis and other bacterial diseases.

Apart from the strictly hygienic point of view, other aspects of this question are of interest. In the first place the large number of diseases and parasites common to both hosts seems to indicate that, in some cases at least, the pig might play the important part of a laboratory animal—a somewhat clumsy one it is true, but one which might prove more suitable than some others. In the second place, attention should be directed to the pig (as well as to other domestic mammals) by those charged with the prevention of disease. And, finally, the diseases proper to the pig, as well as those of human origin found in that animal, urgently require investigation. Of all the domestic animals, the pig has probably received the least scientific attention, and I hope that I have indicated that very beneficial effects to human medicine might result from investigations into porcine diseases and their pathology.—*Proceedings of Royal Society of Medicine*, Vol. XVII, No. 9.

CLEAN MILK: HOW CAN THE GENERAL PRACTITIONER AID IN ITS PRODUCTION?

By G. MAYALL, M.R.C.V.S.,
Bolton.

We think that it may fairly be written that during the last few years there has been a considerable improvement in the cleanliness of the milk supply of the country. A large part of this betterment is no doubt due to the Press, the authorities and the veterinary surgeon. There are still many laggards, however, in the domain of hygiene, and this is especially the case where milk does not go to any central depot, but is sold direct from the cowkeeper to the consumer.

It is easier to obtain a high standard of cleanliness in the case of

one or two milk producers than to haul up the general body of cowkeepers to a loftier plane.

It has seemed to us that in many cases the production of a satisfactorily clean milk supply has been hampered on the one hand by over elaboration of detail, and on the other by careless haphazard methods in the cowhouse. It is little use, at any rate in the North of England, and probably in Scotland and Ireland, advocating or demonstrating the washing of the hindquarters of a cow before milking her. Specially covered cans also are seldom used generally, and even the sight of clean smocks is a rarity. The health of a cow is not likely to be improved by daily washing, and in a multitude of cases the expense incurred in providing smocks and special cans will put them out of court. These things will probably be more in evidence when the farmer gets better paid for his milk.

Any general revolution in the methods of production must incur a minimum of time and labour. If these data are to secure the goodwill and active support of the farmer and dairyman, little expense must also be involved in the question. The source of supply, the surroundings and utensils must be kept clean. At meetings of scientific men I have often been surprised and sometimes disgusted at the stress laid on pasteurisation. According to some of its advocates it is the *summum bonum* to which milk can be subjected. To my mind it is only a cloak to cover filth and disease in milk, and the use of such a process only tends to aid and abet the production of dirty milk. The gross impurities found in milk, the oftenest and in the greatest quantity are fæcal matter, hairs, pus and blood, and how in the world can pasteurisation remove these? The general practitioner who visits many farms and dairies in the course of a year has the opportunity of doing much good in a quiet and tactful way by making suggestions so as to improve the cleanliness of the milk supply. A glance around an ordinary cowshed will indicate where faults can be remedied by the exercise of a little care and effort. The cow with the hindquarters plastered with dung and the tail dung and urine soaked ought not to be present in a 1925 cowshed. The cow's udder and hindquarters may at the outset be clipped with the horse-clippers. Before milking (when clipping has been done) a minute or two with a curry comb and damp dandy-brush will get rid of dust and loose hair. The tail should be kept clean, and may be trimmed off short. The personal cleanliness of the milker and discarding of the fore milk must be attended to.

It is wise to have the gutters in as clean a state as possible, but very, very few men start "mucking out" at five o'clock in the morning. The manure on the standings or at the back of the cows

may be scraped back prior to milking and allowed to remain until after breakfast, when the sheds are " mucked out " and the gutters and gangways thoroughly washed down. Morning labour may be saved where any droppings on the standings are scraped back into the gutter on the evening rounds and some good dry bedding put under each cow. If proper measurements exist as regards the stall, gutter and gangway, a great amount of trouble will be avoided in keeping the cow and milk clean. The barring out of blood and pus from milk ought to fall under the ken of the general practitioner oftener than it does, and a statement of the frequency of their presence and the harm that they do cannot be put before the cowkeeper too often. Epidemics of sore throat in human beings may arise from the milk of cows suffering from mammitis, and a word of caution as to the presence of rats in a shippon, to the use of milk from cows with *post partum* sepsis from retention of the cleansing, and as to milkers attending calves with diarrhœa may be given. In these three cases the *Bacillus enteriditis gaertner* may be communicated to the milk supply with disastrous effects to the human beings that consume it.

The understanding of *cleanliness* by the cowkeeper and his attendants, coupled with goodwill in carrying out the advice given by the veterinary attendant, will materially reduce the bacterial count in a centimetre of milk. By the adoption of simple methods of cleanliness Colonel D. R. Edwardes-Ker, Principal of the Seal Hayne Agricultural College, speaking at the Rotary Club at Newton Abbot in February this year, said that they were now producing Grade A milk in which they did not expect to find more than 1,000 bacteria per cubic centimetre instead of the 200,000 allowed.

Perhaps I should not conclude without making reference to the proper cooling of milk, the sterilisation of utensils, and maybe the use of the clarifier. Where a cooler is installed in a dairy, milk is cooled down to, say, 50° F., but on many farms no cooler exists, and when the cans are put in water they must remain there for some hours for the temperature of the milk to fall to 60° F. Where milk is quickly sold and consumed the absence of the cooler is not much missed, but there is room for a great many more coolers to be used in the milk trade than at present exist. The sterilisation of the utensils should be done by steam, and this may be supplied by carrying the steam in a tube from the copper. The clarifier removes gross impurities, and one of its useful features seems to be as an indicator of the amount of dirt and filth in milk. It might be made in smaller sizes than at present, and be more universally adopted.

In the home, milk should be kept clean, cool, and covered. If no other means exists, the jug or bottle containing the milk should

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be stood in a basin of water, the water being renewed from the tap every few hours.

The vital and important duties carried out by municipal and county veterinary inspectors will perhaps be associated more with actual contagious or infectious diseases of cattle than with hygiene, but where the general practitioner comes across a cowkeeper whose cowhouse and cows are always dirty and neglected, and where no attention is paid to friendly advice given him by his regular veterinary attendants, then a visit from the municipal or county veterinary inspector will probably bring about the desired improvement.

SOME NOTES ON SURRA IN THE CAMEL, ITS TREATMENT AND PREVENTION.

(*Continued from* p. 352, 1925.)

By Major V. C. LECKIE, D.S.O., M.R.C.V.S.,
Royal Army Veterinary Corps.

Preventive Measures.

The primary object to be realised in prevention of the spread of surra in a given body of camels is the elimination of "reservoirs." As before noted, this is no light task, for trypanosomes may only appear in the blood at long and uncertain intervals. Moreover, there are the "naturally" cured to consider, i.e. those animals that have in the course of time acquired a natural resistance to the disease. One cannot but suppose that their blood remains infective, although it is hard to imagine them being such a source of danger as an acute or "swarming" case.

Therefore a systematic search spread over a considerable period is required. This is best carried out by a bi-weekly inspection of all camels. At these inspections the temperatures of all are taken and recorded, and those registering a temperature of 99° or over should have live preparations of their blood made and examined by microscope (under one-sixth magnification). Such temperature takings and blood-testings will have to go on for two or three months before the bulk of the positive cases are eliminated. A good deal can be done from inspections at such parades. The thin and debilitated, and those presenting hump and muscle atrophy, should be singled out for special observation. In some parts of the Punjab it is the custom of sarwans to "fire," with pieces of iron, wire, earthenware vessels, or the bowl portion of a hookah, in fantastical design, on the chest wall or sub-lumbar region of camels that have at some former period suffered from surra. Such camels should, under no

circumstances, be purchased, and should be given special attention when found on blood-testing parades. The thin and debilitated should be worked in isolation and should be regarded with the greatest suspicion, especially if there is no tendency to improve in condition rapidly when thrown out of work and well fed.

The fewer reservoirs one has in a given troop of camels, and the fewer " flies " (Tabanidæ) there are in a given district, the less surra there will be, and the deaths from all causes will be very considerably reduced. We have a parallel in sleeping sickness. The tsetse fly may exist in numbers in a district, but till the carriers of the disease arrive there is no sleeping sickness.

The above would appear to be the best method of elimination at our disposal at the present time, but some more delicate blood-test is required to pick out those " carriers " which may be in good condition and yet at long intervals present trypanosomes in their blood and are a source of danger to their fellows.

The removal of all camels from districts where surra flies are to be found comes only second in importance to the elimination of disease carriers. The Tabanidæ are a large family, and are to be found in the " fly season " almost universally in the plains, hills, and foot-hills. The encroachments of the irrigation system into areas formally set apart for camel raising has of recent years very much increased the number of " fly " breeding-places. But there are yet districts in the Punjab that are notably good from a " fly " point of view, and these should be resorted to directly the " fly " is noticed. Where it is impossible to remove camels to " fly-free zones," the paraffining of known breeding-places may be resorted to. Herms says that if such swamps or pools be examined some time after they have been sprayed with paraffin, the bodies of numbers of Tabanidæ are to be found floating on the water. Tabanus is particularly fond of water, and in attempting to drink gets its body smeared with paraffin and is thereby killed.

During the monsoon it is advisable to break up troops of camels into small parties and endeavour to keep such parties apart. Camels would appear to be safer in their villages, where they are kept in small numbers and watered from village ponds. The banks of these ponds are trodden in by cattle constantly walking into the water, so that there is little or no vegetation round the edges and on the banks ; moreover, there are as a rule few trees in the vicinity on which the tabanus can deposit eggs.

If camels are on the march, they should avoid swampy lands, standing water, river beds, and should especially avoid trees in the vicinity of swampy ground. They should be watered after sun-down.

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At Quila Sheikhupura, in the vicinity of Lahore, there is a large swampy area extending across the railway line for a mile or so, known as the " Deg Nullah," where numerous species of tabanus abound. It is the custom of camel men in this district to water their camels at this Nullah, and the consequence is that practically all camels in the locality are affected with surra. All contact with likely reservoirs should be avoided when " fly " is known to exist, viz. horned stock, donkeys, etc., and especially parties of unknown camels.

Experience tends to show that the disease is spread chiefly from camel to camel, in any case most rapidly from camel to camel. It is an interesting fact that camels have been working on a hill road in the closest proximity to numbers of transport mules for past years, yet not a case of surra has been found amongst the mules on this road. This was constantly looked for, and " fly " were very numerous during the greater period of the time each season, and numerous cases of surra occurred amongst the military camels. The writer has frequently seen and caught Tabanidæ of different variety settling on these mules, and it seemed impossible that they could escape the disease. Perhaps the mule is immune to the camel type of *Trypanosoma Evansi* ; on the other hand, it is suggested that the mule being extremely agile never allows tabanus to remain long enough on his body or limbs to feed. This last solution is improbable, as tabanus when hungry is most persistent.

Smearing of camels with anti-fly dressing appears to have proved unsuccessful, and the only occasion on which it could be practically useful would be if a batch of camels were on the march and were compelled to pass, during the heat of the day, through an area notably bad for " fly " and reservoirs.

The importance of complete control over the movements of camels in the " surra season " cannot be over-estimated. The writer has known a single journey along a river bed or into a locality known to be teeming with " fly " be productive of large crops of fresh cases.

Remount camels, i.e. camels purchased to replace wastage, are a constant source of danger, for when paroxysms of fever are not taking place, although possible, it is unlikely that a blood-test will reveal trypanosomes. Hence the great difficulty of diagnosing surra at purchase. Newly purchased camels should be isolated for at least six weeks, and have their blood tested twice weekly before being allowed to join their individual troops.

It would appear probable that many camel men, having surra camels on their hands, rest and feed them well for a period till they become fat, and then bring them at the earliest opportunity before a purchasing officer for sale. Not being immediately sick from surra,

nothing appears wrong with such animals from a health point of view ; there is no opportunity for a period of observation, as the purchase of camels is usually a " cash down " transaction. Many such reservoirs of disease are introduced into the individual troops of the corps in this manner, and they may be only effectually dealt with by constant observation whilst in isolation, and putting them to treatment as soon as diagnosed.

Purchasing officers should make most careful inquiries with regard to the " surra localities " in any district in which they intend to purchase, and reject all camels known to come from a surra-infected area. Also those animals presenting chronic thickening of lymphatic glands, and those camels which show firing marks on the chest wall or lumber region, the indications of some former attack of surra, should be avoided.

TREATMENT BY SODIUM ANTIMONY TARTRATE.

Whilst these notes were being collected, it was brought to notice that Major H. J. Holness, D.S.O., R.A.V.C., had visited the Church Missionary Society's Hospital at Ranaghat, Bengal, and has seen medical officers at that institution treating kala azar, a human trypanosomiasis, with sodium antimony tartrate. It was stated that very much better results were obtained with this salt of antimony than with potassium antimony tartrate, in so far as the disease kala azar was concerned. The dosage and method of administration, they informed him, was exactly the same as that used for intravenous injection of the potassium salt.

It was determined, therefore, to give sodium antimony tartrate a trial in the treatment of surra in camels at the Lahore Camel Hospital. Although it is perhaps too soon to give an exact estimate of its full value in the treatment, it would appear to offer certain definite advantages over tartar emetic. These may be briefly stated as follows :—

(i) It is less depressing than the potassium salt, and therefore the treatment is less dangerous in application.

(ii) It may be given in relatively larger doses, the course of treatment is thereby much shortened and the disease more rapidly brought under control.

(iii) Sodium antimony tartrate is wonderfully efficient in clearing trypanosomes from the peripheral circulation in a short space of time.

(iv) Condition is generally rapidly put on during treatment and maintained afterwards, there being a substantial increase in body weight as the termination of treatment. The general health and

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appearance of animals treated with this salt improve shortly after treatment is commenced.

(v) Debilitated animals, although taking longer to treat than those in good condition, are generally worth a trial, whereas under intravenous injections of tartar emetic they frequently die under treatment.

(vi) The blood of camels treated with this salt does not appear to be infective to laboratory animals after a course of treatment, and there have been no relapses from the cases treated to date (i.e. those animals that have received 30 grammes or more).

Sodium Antimony Tartrate.

The formula and description, as given in Martindale and Westcott's *The Extra Pharmacopœia*, vol. i, sixteenth edition, is as follows :—

" $[Na\ (SbO)\ C_4H_4O_6]_2\ H_2O$. White trimetric, hygroscopic crystals. Used in experimental treatment of trypanosomiasis, quickness of action is remarkable, a few persistent forms remain and need to be tired out by successive doses."

The salt in appearance closely resembles sodium salycilate, and contains 35·5 per cent. of antimony. It is more easily soluble in water than potassium antimony tartrate. It does not cloud and coat glass vessels in solution ; solutions in distilled water do not appear to deteriorate if kept for a few days.

Its greatest advantage in the treatment would appear to be that it is tolerated by the camel in very much larger doses and for very much longer periods than tartar emetic, and on account of this one is able to thoroughly saturate the system. But here a note of warning must be sounded. Its action in the body resembles closely that of the potassium antimony tartrate, although perhaps less intense, and therefore a careful watch must be kept for the first adverse symptoms, in the manner described in these notes.

Of twenty surra-positive camels treated experimentally with sodium antimony tartrate, and receiving from 30 to 35 grammes of a 1 per cent. solution, eighteen have passed through the course and improved very much in health and appearance. They have not relapsed up to the time of writing. Two have died whilst under treatment. Four of the above series were tested at intervals of twelve, fourteen, sixteen, and twenty days after treatment had terminated, to see if their blood remained infective. One and a half c.c. of fresh blood was taken from each camel and injected hypodermically into four healthy guinea-pigs respectively, each guinea-pig for purposes of record receiving the number of its respective camel. These

guinea-pigs, kept under daily blood examination for a period of seventy days, did not present trypanosomes in their blood. A guinea-pig inoculated as a control with 1½ c.c. of blood from a surra-positive, untreated camel, presented trypanosomes in its blood in six days.

(*To be continued.*)

Clinical Articles

WHITE SCOUR IN CALVES.

By O. STINSON, M.R.C.V.S.,
Appleby.

A FARM in Westmorland had been troubled with a few cases of white scour in calves, gradually increasing in number from 1922 to 1924. In 1925 a very virulent form of the disease broke out in which several calves died, and all the cats on the farm (four in number) were also taken ill with what was diagnosed as feline typhus.

After a very thorough investigation it was decided that the trouble had not been brought on to the farm recently. On the same farm a number of cows had been turning to the bull, and there had also been several cases of premature calving *not due to Bang's bacillus*. The trouble in the cats was gastro-intestinal, just as acute and infectious as in the case of the white scour. It was evidently due to *Bacillus coli communis*, as was the case in the calves. Can the cat trouble have had anything to do with the white scour, or *vice versa*? The following facts prove that uterine infection was common on the farm. A cow, which calved prematurely on January 31, 1925, had broken to the bull after ten weeks, and was served again and held. Eleven days after calving she was very ill, and a diagnosis of auto-intoxication from the uterus was made. Later on several cows which turned to the bull had uterine injections of Lugol's solution, and all held to the next services.

It is worthy of note that the dam of the first calf to have the acute scour was sold as a newly calved cow, and a few days after she entered the second farm this holding also became affected with acute scour in the newly born calves. The most acute case on the first farm (the calf of the sold cow) died twenty-four hours after birth, which is rather significant. Could there be any possibility of the bacillus of the mild type of scour becoming exalted in passing through this cow? Other cows were sold and went on to various farms, but they did not take the trouble with them. Can the bull have played any part in the matter? An interesting symptom of

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all these cases of acute white scour was the evacuation of a colourless fluid from the rectum, which may frequently be overlooked. If this symptom is constant, it should be important, particularly in the case of a first death of a young calf on a farm. Sir John McFadyean examined two specimens of blood for contagious abortion, and reported "not contagious abortion." He also examined one of the calves and reported: "A very virulent form of white scour."

[*Note by Sub-Editor.*—Infection in these cases arises through the intestine and exceptionally through the umbilicus. The contagion passes with the fæces of the animal into the straw and stall floor, in and on which it may remain virulent for a long time. Infection may occur at birth if the calf passes through an infected birth tract. In most cases the transmission of contagion results *from sucking at a soiled udder, through partaking or nosing of infected straw, and licking stall or calf-pen surroundings or floor.* In artificial rearing it is spread by contaminated buckets and dirty attendants. In large holdings white scour may cause huge losses, making breeding and rearing unprofitable and impossible. Professor Wooldridge, in his *Encyclopædia*, among preventive measures, says: "The external genitals of the cow should be disinfected before parturition"; and also: "A protective serum has been produced by the use of organisms of the *coli* and *paracoli* types"; and: "Good results have followed the use of this serum when injected subcutaneously immediately after birth on farms where the disease is known to exist."]

A CASE OF ŒSOPHAGOTOMY IN A DOG.

By G. DUNLOP MARTIN, M.R.C.V.S.

THE subject, a three-year-old fat Irish terrier bitch, was brought to me on Wednesday, March 11th, for examination. The owner said that since the previous Sunday evening (the animal being quite as usual, healthy and normal, up to that time), when she had a meal of fish, she had shown evident discomfort, if not pain, and more or less constantly gulping and appearing as if she wanted to vomit but couldn't. She could deal with small quantities of fluid, but trying to swallow solid food distressed her, and it was at once brought back. Owing to her fat condition it was extremely difficult to locate the obstruction, but I decided eventually it was at the base of the neck, just in front of the sternum, and duly operated under morphia and chloroform anæsthesia, having considerable difficulty in separating the bone from the mucous membrane of the œsophagus, partly, no doubt, owing to the length of time it was imbedded and partly to the very sharp irregular points on the bone. During the manipu-

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lation the dog, though well anæsthetised, made some, to me, very curious whines or cries, due, I thought, to my exerting pressure on the vagus nerve in endeavouring to extract the bone without unduly enlarging the wound. Owing to the nature of the bone I thought it best not to suture the œsophagus itself, but sutured the skin with interrupted silk sutures over a gauze drain soaked in 25 per cent. sanitas and water. After-treatment consisted of 5 grs. chloretone in powder three times a day, and frequently washing out the mouth with above antiseptic, also frequent small doses of milk; the greater part of both antiseptic and milk running out of the wound for the first few days. This escape fairly rapidly became less daily, and the dog went home with the neck wound practically healed on the 23rd, with instructions to be kept on fluid diet. A week later the dog was fast regaining her normal condition, and was put on to animal meal, fish, etc., in carefully regulated quantities, and has made a perfect recovery.

SURRA IN A PACK OF FOXHOUNDS MASKED BY DISTEMPER.

By Major H. ALLEN, R.A.V.C.,
Remount Depot, Saharanpur, India, U.P.

The Saharanpur Hunt was started at the end of January 1924, and received drafts from the following places as follows:—

Quetta (Baluchistan), January 25, 1924, four couple, and December 6, 1924, two and a half couple; Quetta (Baluchistan), March 19, 1924, half couple; Lahore (Punjab), March 14, 1924, half couple; Ootacomund (South India), August 23, 1924, two couple; Jaora (Central India), December 6, 1924, five couple. The original strength of pack was nineteen couples (including four and a half couple of Saharanpur Hunt pups). Twelve hounds were destroyed on account of surra, six died as a result of distemper, three died from rabies, and two were destroyed on this account, whilst of the remainder four only survived as healthy and serviceable.

The pack had been in existence for about eleven months when trouble started in the kennels. The point is from where was infection introduced with special reference to surra? For surra to spread three factors are necessary:—

1. The reservoir (i.e. a surra-infected animal).
2. The transmitting agent (direct or indirect).
3. Healthy animals susceptible to the disease.

As surra developed in the kennel during the non-fly season, the question is to how it was transmitted from actual case or cases imported. I made a careful search for Tabinidæ, Hæmatopota,

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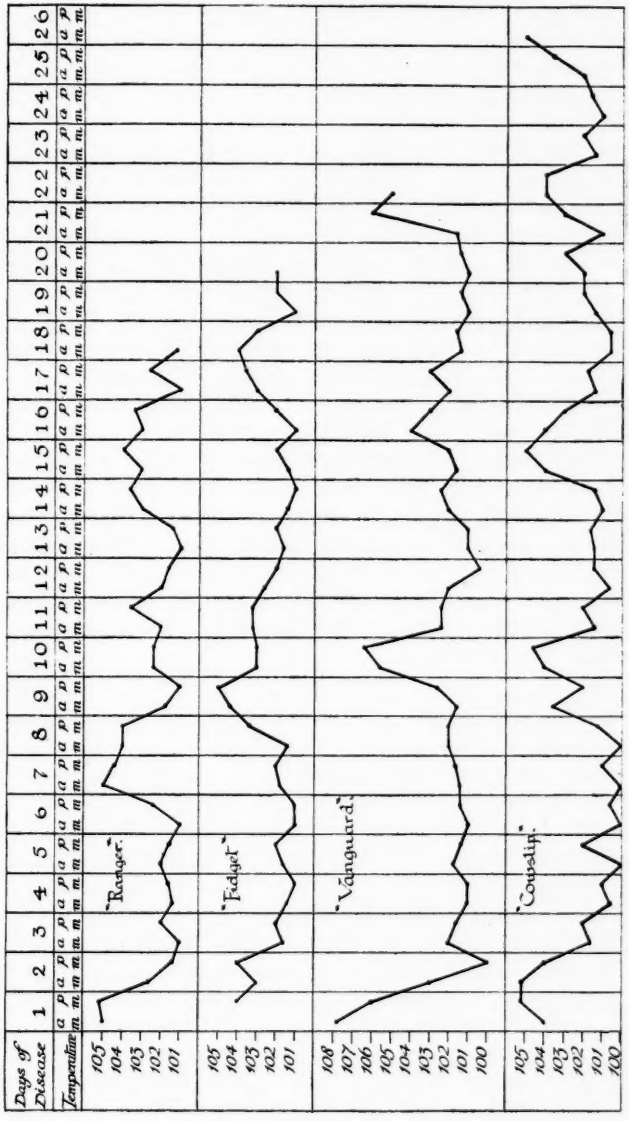
Stomoxys, and Lyperonia, etc., without result. Ticks were present in the kennel—were they the transmitting agent ? In this connection I might mention that the kennel was built the beginning of 1924 of absolutely clean building material in every respect. Ticks are said to be incapable of spreading the disease by direct transmission and capable of spreading the disease to a healthy animal seventeen days and one month after feeding on an infected animal, and probably there is a cyclical development of the trypanosome within the tick. Dogs are said to show trypanosomes in their blood within six to ten days after they have been infected, and can carry the disease from eight to ten weeks.

A surra-infected animal is most dangerous as a reservoir during a paroxysm of fever (i.e. when the trypanosomes are present in the peripheral blood). Paroxysms are more frequent in the early stages of the disease. The blood is said to be infective during the intervals between the paroxysms. Dogs show very little resistance to camel surra, and when produced from the horse or ox the disease runs a more acute course, the average duration being twenty-seven days, the longest period forty-seven days. Dogs are said to be very susceptible to surra by inoculation, and they may be infected by ingestion if there are lesions in the mucous membranes. The usual way in which this occurs is by eating from carcases of animals dead of surra.

Trypanosomes remain alive from twenty to thirty hours in the blood and lymph, and in order to prevent dogs, etc., from eating the carcase and becoming infected, and crows and ordinary flies from spreading the disease to healthy animals by mechanical means, the carcase should be burnt or buried as soon as possible.

It is quite possible for a foxhound to be infected from " breaking up " a surra jackal. Could it be possible that some of the last draft were infected with surra in consequence of breaking up a surra jackal or fox before despatch ?

As surra does not, nor has not, existed in the Saharanpur Depot for many years, and Saharanpur district is not a camel district, and the cases occurred during the non-bloodsucking fly season, and the original batch of hounds had been in the possession of the Hunt since January 21, 1924, and had been through the fly season (June to October) without showing any suspicions of surra, I am of the opinion that reservoirs of infection were imported with the last draft received on December 6, 1924, the indirect transmitter being ticks. The last draft were found to be anything but a " clean " batch on arrival. Six were suffering from chronic eczema, five showed signs of chronic conjuctivitis, and four evidence of chorea.


Days of Disease
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
a p a p a p a p a p a p a p a p a p a p a p a p a p a p a p a p a p a p
m m m m m m m m m m m m m m m m m m m m m m m m m m
Temperature
105 104 103 102 101
"Ranger."
105 104 103 102 101
"Fidget"
108 107 106 105 104 103 102 101 100
"Vanguard."
105 104 103 102 101 100
"Cowslip."

The Hunt lost two and a half couples of pups whelped on March 30, 1924, the result of confirmed rabies.

It is a mystery as to how these pups were inoculated, as they were " walked " by two members of the Hunt in the hills during the summer months of 1924, and were not allowed to wander at their own free will.

The last batch of hounds were undoubtedly also distemper carriers, as it started in the kennels shortly after their arrival.

Microscopic examination of smears from post-mortem material of the first case of pleuro-pneumonia showed that it contained short chained streptococci, apparently in pure culture, presumably following upon an initial attack of distemper.

A streptococcus vaccine supplied by the Imperial Institute of Veterinary Research, Muktesar, Naini Tal District, was used to attempt prophylaxis against the secondary mortal complications due to streptococci. As distemper was masking surra in the pack, the vaccine consequently proved of no avail.

The remaining two couple of hounds have now been running morning and evening normal temperatures since February 2nd.

The Imperial Bacteriologist Muktesar (Naini Tal District), who very kindly examined extra blood smears for me, informed me that the trypanosome found was undoubtedly the same as the surra trypanosome, *Trypanosome evansi*.

The temperature charts on the preceding page should prove of interest.

Symptoms.

Paroxysmal fever, inco-ordination of movement. Loss of condition was not very marked in some of the cases. Anorexia was not a prominent symptom. Three hounds showed swelling about the head and throat. There was injection of the conjuctival membranes and increased lachrymation in five cases, with catarrhal symptoms. One hound became totally blind in both eyes, the result of diffuse keratitis, and complete opacity of both cornea. There was extravasation of blood into the anterior chamber of the right eye in one case. Another case developed œdema of the hind limbs. Careful temperature charts were kept of all, and the four shown herewith may be described as typically illustrative of the temperature curve.

Recommendations.

1. Kennels should always be built well away from horse lines and jheels in countries where trypanosomiasis is prevalent.

2. All new hounds should be rigidly isolated and confined for at least three weeks.

3. All new hounds should be washed in a disinfectant solution before mixing with other hounds.

4. Temperatures should be taken daily of fresh drafts during the period of segregation of three weeks.

ENLARGED THYMUS GLAND IN A CAT.

By T. F. PRIME, M.R.C.V.S.,
Upper Norwood, S.E.

WALLIS HOARE, in his book *System of Veterinary Medicine*, says: "Judging by the facts that no mention is made by any author with reference to diseases of the thymus gland in animals," I thought that perhaps the following might be interesting.

The owner of a two-year-old black castrated cat brought me the body recently, asking for a post-mortem examination to be made, as the cat had always had a cough and been distressed if frightened, or had had much exertion. The cat died suddenly after a few hours' illness, and on opening the body I found that the carcase was in good condition, and had a fair amount of fat for a cat of that age. There was slight congestion of both lungs, but not enough to account for death. The thymus gland was very enlarged, being about three inches long and an inch wide. The heart was small and very flabby. All the other organs of the body were healthy.

A CASE OF SUPERFŒTATION (?).

By R. F. MONTGOMERIE, B.Sc., F.R.C.V.S.,
Department of Agriculture, University College of North Wales, Bangor.

THE subject of this record is a Welsh mountain ewe, aged about five years, a member of a flock to which the rams were turned on the 23rd of September, 1924, and with which they remained until about the 6th of December.

As the lambing season approached the flock was shepherded by the owner's son, who is a particularly trustworthy observer. On the 5th of March, 1925, the ewes were separated into two groups: (*a*) those which, from their appearance, were expected to lamb within the following three weeks, and (*b*) those which would probably not lamb until after that period. This ewe was placed with the latter group.

On the morning of the 8th of March it was found that she had lambed in the night, and this unexpected parturition caused her to

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be particularly noted. She had a plentiful supply of milk and behaved in the usual manner towards her offspring. The lamb appeared normal in every way. They remained with the second group of ewes. On the morning of the 11th of March the lamb was, unexpectedly, found dead, and the shepherd associated its death with the presence of hoar-frost on the grass.

Since the ewe had a good supply of milk, she was removed to the farm buildings to act as a foster-mother. She was hobbled and placed in a small, high-walled field adjoining the farm buildings that she might be constantly under observation. Here every endeavour was made to get her to "take" an orphan lamb. This she refused to do, and it was noticed that she was particularly severe on the little stranger. None of the wiles generally employed met with the least success, despite great persistence on the shepherd's part.

These circumstances continued until on the morning of the 7th of April, four weeks and two days after the birth of her first lamb, it was found that she had delivered a lamb during the night. The cleansing was beside her. There were no other ewes in the field, nor were there any located within reasonable distance. The new arrival she treated as her own and has reared it, a good strong lamb.

Comments.—It certainly seems remarkable that a ewe carrying two lambs should give birth to the second at such a long period after the birth of the first. It is true that the evidence that the first lamb was delivered by this ewe is not direct, but none of the other ewes of the group showed any sign of having lambed, and there were no lambs in the adjoining fields. Not infrequently a ewe may "steal" the lamb of another, but this, in the writer's experience, only happens when the ewe is but a few days from lambing herself.

Abstracts of Current Literature

Sambon, L. W.—The Elucidation of Cancer.—*Journ. Trop. Med. and Hyg.*, xxvii, No. 11, pp. 124–174, numerous figs. London, June 2, 1924.

THIS paper is preceded by an introduction by Sir William Simpson, briefly reviewing the work. Though the author's inquiry on the incidence of cancer in certain parts of Italy was only of a few weeks' duration, the results appear to open a promising field for exploration. In some villages the incidence of the disease was heavy, whilst in

others it was slight, and in the former certain of the animals as well as the people suffered from cancer. In many cases the incidence appeared to depend mainly on the degree of infestation of the house with cockroaches, the infestation being always greatest when the house was close to a bakery, mill, sugar refinery, or other business favourable to the breeding of cockroaches. The species concerned was generally *Blatta orientalis*, usually found in the meal-ark, an indispensable article of kitchen furniture present in all farmhouses. The meal-flour also contained the meal-beetles, *Tenebrio molitor* and *T. obscurus*, the meal-moth, *Pyralis* (*Asopia*) *farinalis*, and the meal-mites, *Tyroglyphus* (*Aleurobius*) *farinæ* and *T. longior*. In the stables adjoining the farmhouses, beneath the lucerne fodder heaps, cellar beetles (*Blaps gages* and *B. gibba*) were always found, as well as wood-lice (*Porcellio*), whilst mice, field mice, and rats abounded everywhere. Cockroaches, meal-beetles, meal-moths, cellar-beetles, and wood-lice all harbour within their body cavity or musculature the encysted larval forms of various kinds of flat and round worms, which spend their adult stage in the alimentary tract of domesticated animals and man. The most important are certain Spiruroidea of the genus *Gongylonema* and one or two small tapeworms of the genus *Hymenolepis*. Nematodes of the genus *Gongylonema* are of special interest with regard to the ætiology of new growths. A species found in the rat is a frequent cause of gastric carcinoma in these animals. Experimental feeding of healthy rats on cockroaches infested with *Gongylonema* almost invariably produces carcinoma of the stomach. Besides cockroaches, tenebrionid and scarabæid beetles may foster these larvæ, the normal hosts of which are apparently certain coprophagous beetles.

The various worms associated with different forms of cancer are enumerated, and though it is not contended that these parasites are the actual cause of cancer, it is suggested that they may be carriers or coadjutors of the specific organism, which finds favourable conditions for its activity in the irritation produced by the parasites in the invaded organs. In the cases referred to above the most common form of the disease was cancer of the stomach, not of the pyloric but of the cardiac end, and it is in the latter position that the larva of *Gongylonema* is found in cases of worm-induced carcinoma in rats. Should *Gongylonema* prove to be always associated with cancer of the cardiac end of the stomach, the knowledge could be made use of in the prevention of that particular form of the disease by controlling cockroaches in their breeding-places and by the protection of meal and other foodstuffs from this pest and rats.

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The various theories so far propounded concerning the cause of cancer are reviewed, and in a series of appendices the author deals with the various worms implicated, and also traces the occurrence and life-history of the cockroaches from the earliest records. Some Spiruroidea and other helminths fostered and disseminated by blattids and tenebrionids are also discussed.—*Review of Applied Entomology*, August 1924.

Campaign against Tuberculosis in Holland.—*Schweizer Archiv f. Tierheilkunde*, February 15, 1925.

A TUBERCULOSIS Commission has been established in Holland, presided over by Professor Dr. de Blieck. In a consideration of the matter, and after a general meeting of the Dutch Veterinary Associations at Utrecht on November 15, 1924, at which the question was fully discussed, the Commission came to the following conclusions :—

1. The suppression of tuberculosis in cattle is necessary as well from the standpoint of human hygiene as on economic grounds. The combating of the disease is very pressing, since it increases in many districts.

2. The voluntary fight against it, with the full co-operation of authorities and societies, must stand well in the forefront.

The fight against it should be conducted under veterinary State supervision, which should especially concern itself with the hygiene of the subject.

3. Investigations concerning immunisation against tuberculosis as well as research into all the bearings of the tuberculosis question should be strongly supported.

4. The expenses of the campaign should be met by an organisation of the cattle owners concerned. The State should only support the societies which carry out in a fairly efficient manner the precepts of the model rules and regulations. It is desirable that the money derived from the examination service for export of meat and for import, transport, and export of cattle, in so far as it is not used for the expense of this service, be devoted to the campaign against tuberculosis. It is desirable that Article 45 of the Animals Act concerning the notifying of open tuberculosis be made obligatory and that regulations concerning milk, marking, and trade and trafficking be introduced.

5. The segregation or marking of positively reacting animals, if desirable, is not recommended. They could not be recognised as to be freely bought and sold, and the buyer must protect himself by the desired guarantee.

The Dutch Commission recommends trusting mostly to voluntary effort. Thereby the powerful co-operation of individual animal owners will be obtained. It is to be feared that the peasantry will be injured by compulsory rules and regulations, so that from the commencement the whole business will be looked on unfavourably, and unless goodwill can be obtained success will be quite out of the question. Societies of owners should be formed having for their object the suppression of tuberculosis. Those animal owners are to be members who submit to the statutes.

Such societies could be recognised and supported by the State if they fulfilled the following conditions :—

1. The statutes must be recognised by the State.

2. All the bovine tribe of the societies must be examined as to their health once or several times annually by a veterinary surgeon. The expense is to be borne by the society or by each individual owner.

3. Animals with open tuberculosis, as soon as such is recognised, must be separated from their companions. They must be marked with a hole of about 2 centimetres in diameter through each ear, and must be given up to the shambles three weeks after the detection of the disease by the society and at its expense.

4. The post-mortem report must be rendered within a week to the inspector of the State veterinary service of the district concerned.

5. Besides the veterinary examination mentioned in 2, the inspector of the State veterinary service himself can order one to be made if he considers it necessary from the post-mortem report or on other grounds.

6. If a society buys a new cow or bull it must not be brought into the herd and put on the register of the society until it has passed a veterinary examination.

7. Yearly credits will be placed for disposal by the Government, which on the proposal of the inspectors will be allotted to the societies for the campaign against tuberculosis. The amount will be according to the number of registered animals, or according to the number of animals to the good after the slaughter of those affected with open tuberculosis. This compensation can be increased if, in addition to the above-mentioned instructions, the following be carried out: measures for the breeding of tuberculosis-free cattle. And a still higher sum will be paid if the animals of the society are regularly tested with tuberculin and the positive reactors slaughtered after they have been marked with a hole through the right ear.

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The Dutch are firmly resolved to tackle the disease in a methodical manner. In the Dutch province of Friesland the campaign against tuberculosis has been systematically carried out with a definite aim in view. The success after six years has been good and very encouraging to further effort.

Vogt, Dr., Director of Weissenfels a Saale Abattoir.—Tuberculosis of the Fallopian Tubes and Sterility in Cattle.—*B.T.W.*, February 13, 1925.

THE findings of the slaughterhouse and meat inspection are frequently made little use of in practice. The uterus of cattle has on well-known grounds always played a big rôle in meat inspection, but the examiner has troubled himself little about the Fallopian tube and ovary in this class of animal. But these organs are quite interesting for him, as since the war a strong campaign against sterility has set in. These facts have induced many veterinarians to look at these organs somewhat more closely. A further circumstance is perhaps also responsible in that ovaries are collected for the preparation of biological products, so that on this ground these organs must receive greater notice. The question has interested me much as to how frequently as a result of tuberculosis of the serosa of the abdomen a tuberculosis of the Fallopian tubes occurs. I have during the period from May 20, 1924, to September 20, 1924, examined closely all cases of tuberculosis of the serosa in cows and heifers, and have arrived at the following results: of 562 cows slaughtered during this time, 44 or 8 per cent. were affected with tuberculosis of the serosa; 6 heifers also were affected. Of these 44 cows with peritoneal tuberculosis, 20 had Fallopian tube tuberculosis, and of the 6 heifers, 3 had tuberculous changes in the Fallopian tubes. Particulars are as follows:—

May 20th.—Cow, eight years old, had been dry a long time, not pregnant. Slight peritoneal tuberculosis, bilateral tube tuberculosis, and tuberculosis of one ovary.

May 25th.—Cow, peritoneal tuberculosis, bilateral tube tuberculosis.

June 17th.—Aged, fat cow, peritoneal tuberculosis, and tuberculosis of mucosa of both horns of uterus and both tubes.

June 25th.—Lean, aged cow, serosal tuberculosis, and tuberculosis of both tubes and ovaries.

July 3rd.—Cow, serosal tuberculosis, tuberculous dropsy, tuberculosis of both tubes.

July 3rd.—Cow, serosal tuberculosis, little finger tumefaction of both tubes.

July 4th.—Cow, serosal, udder and kidney tuberculosis. Lead pencil thick tubes, packed inside with caseous masses.

July 16th.—Cow, very well nourished, serosal tuberculosis, tuberculosis of both tubes.

July 16th.—Cow and heifer (mother and daughter). Both with serosal tuberculosis and bilateral tube tuberculosis. Both had often been bulled with no result.

July 29th.—Cow, serosal tuberculosis, mucous membrane of both tubes swollen, but no nodules perceptible.

August 5th.—Cow, serosal tuberculosis, tuberculosis of both tubes.

August 7th.—Cow, serosal tuberculosis, tuberculosis of both tubes and subsequent stenosis of one.

August 8th.—Cow, severe serosal tuberculosis. Tubes appeared quill-like.

August 9th.—Heifer, serosal tuberculosis. The tubes were occluded with yellowish exudite inside, their mucosa was inseminated with millet-sized tuberculosis nodules. The heifer was often put to the bull, but never conceived. It had been in a shed with other heifers.

August 18th.—Cow, serosal tuberculosis, udder tuberculosis. The uterus greatly enlarged, the walls wholly tuberculous, tubes finger thick. Abortion after seven months. Other animals in same shed did not conceive.

August 19th.—Cow, serosal tuberculosis and bilateral tube tuberculosis.

August 22nd.—Cow, serosal tuberculosis, finger thickening of both tubes.

September 3rd.—Cow, severe serosal tuberculosis, both tubes are little finger thick. After first calving put to the bull several times without result.

September 5th.—Cow, serosal tuberculosis, and both sided tube tuberculosis.

September 12th.—Heifer, serosal tuberculosis, complete tuberculosis of ovaries, tubes are finger thick. Animal not pregnant.

September 15th.—Cow, serosal tuberculosis, tuberculosis of tubes.

September 17th.—Young cow, serosal tuberculosis, one tube finger thick.

None of these animals conceived for not one had an embryo. It is probable that tube tuberculosis is responsible for 4 per cent. of sterility in cows and heifers. The practising veterinarian must bear this in mind in cows and heifers returning to bull. In another case a cow taken to the bull at least twenty times in six months was quite free from tuberculosis, but there was complete disappearance of both tubes which were absolutely crumpled up.

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Rathge.—The Presence of Koch's Tubercle Bacilli in the Urine of Cattle Affected with Renal Tuberculosis.—*D.T.W.*, September 13, 1924.

RENAL tuberculosis has not the importance, from a contagious point of view, of open tuberculosis of the udder, of the uterus, and of the intestine. Veterinary pathology mentions in a few words tuberculous lesions of the urinary organs, but the statistics of the abattoirs show that renal tuberculosis is a rare malady.

It is not so in human pathology where renal tuberculosis constitutes an ailment of major importance, having been the object of many and varied studies. In thirty-four cases of renal tuberculosis in man, Oppenheim found tuberculous lesions of the ureters twenty-one times, of the bladder twenty-eight times, and of the urethra eleven times. The great difference in the frequency of tuberculous affections of the ureter, bladder, and urethra of the ox is that the urine of these animals rarely contains the bacilli, although lesions are situated in one or several renal lobules. The urine of bovines alternates the virulence of the bacilli; the mucosa of the bovine urinary tract offers a special resistance to the germination of Koch's bacilli.

In proceeding to the bacteriological examination of the urine of affected cattle, whether due to grave visceral tuberculosis without renal lesions, or to renal tuberculosis, Rathge concludes as follows:—

1. It is only exceptionally that Koch's bacilli can be demonstrated in the urine of tuberculous cattle.

2. The urine only contains bacilli if the renal parenchyma is affected.

3. The demonstration of bacilli can only be effected by examination of the sediment, but recourse must generally be had to inoculation of the guinea-pig.

4. If the kidneys are affected it is sometimes impossible to show bacilli from the urine by direct examination except by laboratory methods.

5. The search for bacilli in the urine as an aid to diagnosis has no practical value, renal tuberculosis of bovines being almost always secondary and occurring as a result of grave lesions of other organs more accessible to clinical examination than the kidneys.

Blair, K. G.—Some Notes on the Insect Intermediate Hosts of "Gongylonema."—*Journ. Trop. Med. and Hyg.*, xxviii, No. 3, pp. 76–81, 7 figs. London, February 2, 1925.

IN view of the extremely probable connection between *Gongylonema* and certain forms of cancer, the elimination of these parasites would at any rate control to a very appreciable extent the incidence of these forms of the disease. Actual records of the association of *Gongylonema*

with insects indicate that the intervention of an insect host at some period of its life-history is essential to the proper development of the worm. Encysted larvæ have been found within the body cavity of many genera of coprophagous beetles and under experimental conditions also in the meal-worms, *Tenebrio molitor*, L., and *T. obscurus*, F., and other Tenebrionid larvæ, as well as in the musculature of the cockroaches, *Blattella germanica*, L., *Blatta orientalis*, L., and *Periplaneta americana*, L. A brief review is given of these insect hosts and their habits. Some of the species dealt with have already been noticed in this connection [*R.A.E.*, B, xii, 128]. Among Tenebrionids the cellar beetles, *Blaps mucronata*, Latr., and *B. lethifera*, Marsh, are fairly common in England. A key is given for the separation of these and the two other species of this genus previously mentioned [*loc. cit.*]. The genus is widely distributed in the southern Palæarctic region, being most numerous in south-west Asia and reaching eastwards to Japan. The original food of the larvæ and adults of Tenebrionids was probably decaying vegetable matter. Certain genera have become of economic importance by developing the habit of eating off the seedlings of growing crops, while others have become dung-feeders, many species even invading houses, granaries, and bakehouses.

The known beetle hosts of *Gongylonema* fall into two categories, dung-feeders and meal-feeders. The young stages of the Nematodes presumably occur in these hosts, the latter having ingested the egg that has been passed out of the alimentary tract of the mammalian host of the mature worm. In the case of dung-feeders this ingestion of the egg may occur in the larval or adult stage, though the development of the worm may perhaps be influenced by the age of the host at the time of ingestion. In the insect host the larvæ burrow through the wall of the gut and become encysted in the body cavity or musculature of the insect, this location probably varying according to the species of *Gongylonema*. To complete development the transference to a vertebrate host is essential.

In small mammals, domestic fowls, sheep, cattle, etc., the worm presumably is ingested with the entire insect host or part of it containing the encysted worm. In the new host the cyst wall dissolves and the worm is liberated. Infection in man is difficult to account for except by the fact that some of the smaller insect hosts have been found in food, and in the case of hasty or insufficient cooking the worms might not be destroyed. Meal-worms in flour bins probably obtain the infection from the desiccated excreta of rats, mice, or fowls. After encysting, it may (or may not) be immaterial to the *Gongylonema* whether the meal-worm be eaten by another rat, or,

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after surviving an attempt at cooking, be eaten by man. Possibly the investigation of other meal-feeding larvæ, e.g. the beetles mentioned above, as well as Lepidopterous larvæ of the genera *Ephestia*, *Pyralis*, and *Aglossa*, for larval Nematodes would yield results of value.

The possible insect hosts of *Gongylonema* in Iceland, besides the cockroaches already mentioned, are *Aphodius lapponum*, Gyll., *Blaps mucronata* and *B. gages*, L. *Tenebrio* may possibly occur in bake-houses.

Pristonychus terricola, Hbst., is recorded for the first time from Iceland. A closely allied species preys on *Blaps*. The fate of *Gongylonema*, provided it were swallowed without injury by one of these carabids, is uncertain. It may have lost its original capacity for burrowing through the wall of the intestine, or possibly perish in the process of digestion. Seurat, however, has shown that the larvæ of certain spirurids, if ingested, along with their first host, by some small animal which is not their appropriate final host, are capable of re-encystment.—*Review of Applied Entomology.*

Translations

LAPAROTOMY IN CARNIVORA DURING THE LAST SEVENTEEN YEARS.

By Dr. FRANZ BENESCH.*

Section with Partial or Total Extirpation of the Gravid Uterus.

In carrying out Cæsarean section the infected uterus is amputated in the cervix region and the stump sutured extraperitoneally in the posterior angle of the abdominal wound, and this operation is carried out, "according to Porro," because it was first performed by Porro in woman in the year 1876. It will be easily understood that this extraperitoneal provision for the stump, like every other operation, has undergone changes in course of time especially as regards the stump itself. The designation of "Porro's method" was adopted also in veterinary literature. We understand by the name of "Porro-operation" in the veterinary sense every laparotomy involving total extirpation of the gravid infected uterus, whether connected with extraperitoneal, intraperitoneal, or vaginal stump-placing.

Collectively 122 laparotomies have been performed with partial or total extirpation of the uterus, resulting in 70 cures (57 per cent.). The results cannot be considered as bad when one calls to mind

* *Wiener Tierarzt Monatschrift.*

that the greater part of the fatalities were in those animals in which at the time of operation peritonitis or sepsis had occurred.

Concerning the advances and results of total extirpation, Professor Keller says that at the commencement of the period almost all the patients died. A strict discrimination of cases could not be made. From the years 1906 to 1911 there were 40 per cent. of cures on bitches operated on. At this time the extra- and intraperitoneal method of stump suturing was employed. By better discrimination of cases, and at the same time by greater pains in the use of antiseptics in the disposal of the stump, in the year 1918 the cure figure advanced to 50 per cent. In the years 1918–1923 I had a total of 62 total extirpations with 56 per cent. of successes. In the later years I have practised the intraperitoneal plan because of its relative simplicity and dispatch. In several cases where a special virulence of the infected uterine contents was to be feared I have made the amputation with the thermo-cautery, but the results were no better. Whilst a few cases healed without any reaction, in about 50 per cent. of the dead bitches there was necrosis of the stump. From this we concluded that the heat of the thermo-cautery had an unfavourable effect on the tissue of the sutured stump, and we went back to the amputation by sharp excision. Attempts to diminish the virulence of the uterine contents by sublimate injections before amputation produced no better results.

Cats did not do so well as bitches in this operation, and I found them little capable of withstanding it and recovering. Several weeks ago I carried out the vaginal disposition of the stump in a bitch with emphysematous pups and high fever. The Derby-Gum elastic, as recommended by veterinary surgeon Schopper, was also employed. The case healed normally and was an inducement to test the method further. Hitherto five bitches and two cats have undergone total extirpation with vaginal treatment of the uterine stump, and in all seven animals a cure without special complications has been attained. Only in one bitch, which was discharged ten days after the operation, did severe hæmorrhage occur from the vagina on the second day home, and the animal was brought back to the clinic in a very bloodless condition. Examination showed that the excessive liveliness of the animal had loosened a thrombus situated in front of the elastic ligature, and bleeding resulted from the strong lateral arterial branches of the cervix. By firm tamponing of the vagina, and by subcutaneous use of large quantities of physiological salt solution with adrenosan, the hæmorrhage was stopped and the animal was soon quite out of danger. Although the number of cases is small, the results have been very satisfactory, and especially so with the cats,

and the question arises whether this method of stump disposal will not become a standard one. Further statistics need collecting.

TOTAL EXTIRPATION OF THE DISEASED BUT NOT GRAVID UTERUS.

(*Pyrometra Operation, Hysterectomy in its Narrower Sense.*)

Although sectio cæsarea, according to Porro, may be designated as hysterectomy, yet under the true meaning of the name we class those cases of total extirpation of the uterus involving laparotomy, in which the contents of the organ is the product of an acute or as a rule chronic course of inflammation of the endometrium (pyometra). Only in rare cases was it necessary to perform hysterectomy on account of large amounts of blood in the uterus, and also in a case which corresponded to one of human hæmatometra.

Pyometra in the bitch has often been the subject of publications. Keller has discoursed on its ætiology, anatomical character, symptoms and therapy (Keller, "Pyometra of the Bitch," *Zeitschrift f. Tiermedizin*, 1909, vol. xiii, p. 401).

My remarks are chiefly confined to the statistics of the matter and the therapeutical review of the data.

In the years up to 1923, 248 hysterectomies in carnivora were performed in the clinic, and 183 (74 per cent.) resulted in cures. A great portion of the cases with lethal exit were in animals at or near senility, which were brought by the owner either in a condition of severe cachexia or already showing signs of sepsis. In a few at the time of operation a diffuse purulent peritonitis was evident. The remaining fatalities were due to necrosis of the cervix, adhesive peritonitis, hernia of the mesentery and intestine, and narcosis. I have done 111 pyometra operations with 84 cures (76 per cent.).

Advances.—As Keller has already shown, the chances of a good result to the operation are so much the more unfavourable the longer the radical operation for removal of the uterus is delayed. In quick advancing loss of physical strength one should proceed at once, even if after the operation one has immediately to use salt infusions, cardiacs, and concentrated nourishment. We no longer adopt a hopeless conservative treatment, but get to work immediately if the clinical symptoms point undoubtedly to pyometra. Not unfrequently animals are brought to us in which the subnormal temperature and almost imperceptible pulse herald approaching death. In such cases, and unless the owner especially wishes us to operate, we give them a miss, especially if the animal is very old. Here also we may mention cases in which the clinical symptoms do not certainly indicate pyometra, as in cases of torsion of a uterine horn filled with pus, in breeches in the cervix, and great adiposity. In such doubtful

cases differential diagnosis by the presence of hyperleucocytosis and the abnormal composition of the blood in pyometra is of very great service.

Advances in Technique.—The fact that in sharp section of the cervix with scissors or knife a lumen highly infected with virulent bacterial flora is opened, and in its suturing and sinking into the abdominal cavity there is great danger of the migration of bacteria on to the peritoneum, led Keller at first in most cases to adopt extra-peritoneal suture of the stump. Only in a few animals in which repeated examination of the pyometral discharge showed no known virulent germs was the intraperitoneal method adopted. Later on experiments showed the noteworthy fact that bitches recovered without any special reaction in spite of the presence of highly virulent streptococci in the pyometral discharge even when the intraperitoneal method was adopted. Professor Keller commissioned me to continue these tests, and I have carried out intraperitoneal stump procedure in 111 animals, when preparations showed streptococci almost in pure culture. The results obtained are so satisfactory that for years we have only employed the intraperitoneal method of stump disposal. Rare cases of post-operative peritonitis have shown us that carefully carried out cleansing and disinfection of the small lumen of the cervix before suturing the stump is sufficient to prevent the migration of bacteria from the closed stump on to the peritoneum. Whether a certain capability of resistance or sensibilisation of the animal body against the bacterial flora of the pyometral pus plays a rôle or not is uncertain. Experiments in our clinic showed that many strains of bacteria incorporated intraperitoneally and which had been bred from the pyometral pus caused no special derangement of health. In other experimental animals this kind of infection, especially if by streptococcal cultures, led to diffuse purulent peritonitis with death.

Herniotomy with Descent of the Gravid or Diseased Uterus.

Professor Keller has operated on thirteen cases of inguinal hernia with eight recoveries (62 per cent.). I have operated on eight bitches with five (63 per cent.) successful results. The contents of the hernial sac was formed by the uterus alone or uterus with intestine. In all five cases we opened the hernial sac, and after reposition or amputation of the contents sutured the hernial ring. A special note of this section will be published later on.

Ovariotomy.

The ovariotomy of our female carnivora was performed by the veterinary surgeon for several reasons. On the one hand to do away

with the objectionable symptoms of œstrum and to get rid of male followers, on the other hand to suppress morbid symptoms of sexual life or sexual impulses (hysteria, false pregnancy, etc.). In young bitches castration will also lead many a time to increased watchfulness and alertness.

In our clinic fifty-two castrations have been carried out, the greater part in bitches, but a few cats and guinea-pigs have also been done. Including those done in the ambulatory clinic, perhaps the total would reach seventy.

The cure figure shows that ovariotomy is quite safe. No cases of death have occurred.

Technique.—We perform ovariotomy almost exclusively from the linea alba, because from this place the ovaries are most easily reached. In many animals we have removed both horns of the uterus at the same time, since after ovariotomy these organs are superfluous and undergo degeneration. In order to save bandage material I often did the operation through the flank in bitches and cats. The method was successful but more difficult than that by the middle line, because the ovary on the other side could only be reached and ligatured by strong pulling and pressure on the opened flank. In well-nourished bitches the operation was still more difficult. In cats I have had the experience that the flank operation is as easy as that by the linea alba. The belly walls in this animal can be much better pressed down than in the dog, in order to make the ovary and its ligaturing accessible.—G. M.

THE TRANSMISSION TO MAN OF SWINE ERYSIPELAS.

By L. CAUCHEMEZ.*

In September 1919 L. Cotoni published, in *Annales de l'Institut Pasteur*, a study on the bacillus of erysipelas, and finished this work by the personal relation of a case of human erysipelas. In 1914 the author accidentally inoculated himself with a virulent culture at the back of the thumb. The symptoms were "analogous to those of the different observations already known": an erythema slightly painful was apparent eighteen hours after the traumatism, accompanied soon after "by a linear track half-way up the arm." With alternations of decline and extension the red œdema on the eighth day had extended over the whole thumb. From the fourth to the seventh day the author had received 5, then 20, then another 20 c.c. of serum. The ninth day local symptoms declined and disappeared

* *Rec. de Méd. Vét.*, April 1925.

definitely. But from the ninth to seventeenth day painful symptoms due to the serum occurred.

In a communication appearing in October 1921, in the *Annales de l'Institut Pasteur*, on a "bacillus similar to the bacillus of swine erysipelas met with in the cephalo-rachidian liquid of a meningitic," J. Dumont and L. Cotoni point out that "the pathogenic rôle in man of the bacillus of erysipelas appears restricted . . . the clinical picture of cutaneous symptoms varies little: lymphangitis of the hand, or of all the limb, generally curable, very rarely fatal." In Germany observations are quite numerous and far from all being published. In France, Sabrazes and Muratet have recorded a case analogous to that of Cotoni. Langrand (verbal communication) made an individual observation of an accidental inoculation of the left index-finger, which happened in 1911 in the course of researches on erysipelas; at the point of inoculation a raised erythematous patch showed bacilli at the puncture. A reticular lymphangitis without swelling followed the initial accident, with patches on its course; this extended to the hand and forearm. Fever for forty-eight hours, general stiffness. Warm sublimate baths. In fifteen days total disappearance of the symptoms.

At the abattoir of Vaugirard on March 17th a slaughtered pig showed suspected markings on the head and fetlocks; we took off the kidney for microscopic examination: the bacillus of erysipelas was discovered. On March 19th at the level of a scratch on the right index-finger, at the base of the nail, in twelve hours there commenced a reddish œdema, sensitive, showing a marked ridge round the nail. In the evening the lesion was aggravated and extended over the whole of the third phalanx.

On the 20th the œdema extended to the second phalanx.

On the 21st it had completely invaded the second phalanx.

On the 22nd the finger is pasty with violet markings, pain slight.

On the 23rd the first phalanx is attacked.

The condition remains stationary until the 28th, on which date the redness reaches the palm and extends into the interdigitated space towards the medius in violet red trails of reticular lymphangitis. We went to the Pasteur Institute, where Césari, who had already suspected erysipelas, and Cotoni made a puncture and some cultures: the puncture only furnished blood without serosity. Direct examination and cultures remained negative. This same day at quarter to four Cotoni gave us a subcutaneous injection under the skin of the abdomen of 20 c.c. of serum. At ten o'clock the skin at the level of the lesion is losing its redness and the size of the finger is almost normal,

The redness slowly declines; the general condition improves on the ensuing days.

On April 1st there is only slight redness.

Two facts, in default of bacteriological control, give some precision to our observation and allow of a probable diagnosis: (1) The symptom of infection appeared about forty-eight hours after manipulation of the organ taken from the pig with erysipelas. (2) The lesions declined in a very marked manner in the hours following the injection of serum.

Obituary

WILLIAM HADDOCK DALRYMPLE, M.R.C.V.S. (1856–1925).

A DISTINGUISHED veterinarian, whose career can be claimed to hold connection with two countries, has passed away. The Glasgow Veterinary College can point with pride to many distinguished sons, but few were more beloved and have received more honours than William Haddock Dalrymple. Born at Wigton in Scotland in 1856, he graduated from the Glasgow College at the age of thirty. After spending a short time in practice in his native country and in Dublin, he crossed over to America, where his knowledge and ability soon found him a position as Professor of Veterinary Science in the State University of Louisiana, together with the appointment of Veterinary Adviser to the State Experimental Station. The name of Dr. Dalrymple of Baton Rouge has for many years been a household word in veterinary and agricultural circles in America, for not only did he make his influence felt locally, but he took the greatest interest in the advancement of his profession and in the official working of the American Veterinary Medical Association. The latter showed their appreciation by making him their President in 1908, his year of office being a very successful one. His genial courtesy and marked ability for handling men and things made him an intensely popular man, and it is fairly safe to say that he was a friend of all. Nothing which concerned the advancement of the profession was ever made a trouble of, and his British colleagues on this side of the water could always rely upon his best endeavours to supply them with any facts, scientific or social, which were likely to bring together a closer *liaison* between the veterinarians of Great Britain and those of America. Such deeply unselfish men are difficult to find, and his place in the profession will be hard to fill.

Reviews

"PROTOZOOLOGY."

It will be a matter of interest to veterinary surgeons to hear that a new journal devoted solely to the study of the parasitic Protozoa—the first of its kind—has now made its appearance. It is published by the Institute of Agricultural Parasitology of the London School of Hygiene—the Institute responsible for the *Journal of Helminthology*, which is edited by Professor R. T. Leiper, and which is already well known to our readers. "Protozoology" is intended primarily for the publication of original articles arising out of the work of the Institute, and is certain to contain much of interest to veterinary surgeons. The first number, now before us, contains, among other articles, an interesting account of *Gastrocystis*—an extremely common parasite of the abomasum of sheep in Britain and elsewhere. The various stages of its development are traced and illustrated by half-tone plates and line-blocks. Another interesting paper is on a flagellate protozoon—*Giardia*—found parasitic in a parasitic nematode. The host of the nematode did not show any sign of protozool infection, however.

We hope that this new journal will have the success which its enterprise deserves. It may be obtained direct from 23 Endsleigh Gardens, London, N.W. 1.

Gefahrloses Niederlegen und Ausbinden (Safe Casting and Untying). By W. Schwarzkopf of Kosten. Pp. 33 40 figs. in text. Berlin: Richard Schœtz. Price 2 marks 40 pfennigs.

This pamphlet gives experiences and suggestions for use in practice of methods of safe casting, fixing, and freeing of subjects necessitating surgical attention. Many of the processes described have been used successfully in field surgery carried out as a result of war wounds. The complications which the author has observed following the usual methods of control have been avoided by paying attention to the procedures which he advocates.

The illustrations are from actual photographs of war injuries, and some of them depict the parts after recovery. Cases of acute purulent osteomyelitis were treated very successfully.

Gastroskopie beim Hunde (Gastroscopy in the Dog). By R. Unterspann of Schmargendorf, Berlin. With a coloured plate. Berlin: Richard Schœtz. Price 2 marks 70 pfennigs.

This little brochure gives the history of endoscopy and the special uses of gastroscopy. The method of obtaining a view of the interior of the stomach in the dog is described and the instruments and preparation detailed. In certain diseased conditions the procedure helps diagnosis considerably, and is handier and cheaper than the use of Röntgen rays. The dog is narcotised with a rectal injection of 10 per cent. chloral hydrate in gum arabic or linseed slime and the anus plugged with a wad of wool. One drawback is that the animal has to be fasted for twenty-four hours before introducing the gastroskope. As a contribution to the subject of endoscopy in the domestic animals the pamphlet is a welcome one.

XUM

News in Brief

THE following abstracts from the *Meat Trades Journal* during 1925 will interest our readers :—

Amongst many other important matters under the careful consideration of the Meat Trades Federation leaders are : " The retention of private slaughterhouses " ; " Compensation for confiscation of meat destroyed in the interests of the public health " ; " Uniformity of meat inspection, and by practical men " ; " The prohibition of fish meal as a food for pigs " ; and " Warble-fly ravages."

CANADIAN STORE CATTLE.

During the week ended May 30th 583 Canadian cattle, consigned as stores, were landed in Great Britain, 503 being unshipped at Glasgow on 27th ult., and the remainder at Manchester on the same day. The majority of the Glasgow consignment were sold at the wharf and met a steady demand, one lot of Shorthorn crosses making from £24 5s. to £35 5s., while a lot of 60 averaged £30 17s., and another lot of 91 averaged £30 12s. per head.

UNSETTLED BY MEAT REGULATIONS.

The interpretation of the new meat regulations is causing a lot of uneasiness up and down, and it is just as well that grievances should be ventilated instead of being held up and stifled. One authority is insisting upon the closed window being adopted, whilst a neighbouring township does not consider it necessary. It is all so puzzling, for surely if such legislation has design at all it is meant that there should be equality of treatment so far as the provisions of the Orders are concerned. Yet these regulations are sent out without any instructions, and local authorities—or, rather, their advising officials—are left to put their own interpretations upon the various clauses. There are bound to be different opinions, and consequently there is also bound to be dissatisfaction. No one seems to be falling out about the ideals and objects behind the regulations, but there is every justification for the attitude that all should have the same treatment—whether it be concession or handicap. It looks very much as if there will have to be a county conference of local authorities on this matter before everyone becomes settled.

MEAT REGULATIONS PROSECUTION.

Under the new meat regulations a summons for failing to notify the slaughtering of pigs, and for using as a slaughterhouse unlicensed

premises, was heard against Edward Myerscough, an old-established meat salesman of Great Crosby, at the Liverpool County Police Court on Friday. This was the first case of the kind under the regulations. The Medical Officer of Health, with a Sanitary Inspector, found four carcases of pigs being prepared for sale. The carcases were quite sound, and defendant was summoned simply for a breach of the regulations, and as a warning. The case was one for a nominal penalty and for the publicity which the sanitary authority sought in the general interest of the meat trade and the public. Fines and costs amounting to £5 2s. were ordered to be paid.

Dumfries Town Council recently installed a humane killer in the slaughterhouse and left its use optional. Figures are now to be given showing what use is being made of it. The Butchers' Association are against its use, but one firm have had all their animals (including bulls) killed by it this last month.

Cattle Farming in Japan.

Some interesting data regarding the present conditions of cattle farming in Japan is furnished by the Department of Agriculture and Commerce of Japan. According to the statistics of the Department the figures for cattle at the end of 1922 were 1,468,603 head. These numbers appear to be the largest recorded for many years. A large quantity of beef is imported from China and other countries to meet the yearly increasing demand. A small proportion is derived from Australia, including small shipments of mutton to Kobe. In farming operations cattle are largely used for draught purposes. For this purpose cattle are imported from Korea to the extent of upwards of forty to sixty thousand per annum. The Japanese breed of cattle is generally supposed to have developed from the Zebu and Bantin. The method adopted for tillage is to use the cattle for draught purposes, and then fatten them. Farmers who fatten stock three times a year usually market the cattle in October, January, or February, and again in May. The proportion of draught cattle slaughtered for beef ranges from 63 to 67 per cent. At one time milk was so rare in Japan that it was regarded as a medicine. The demand for milk by foreigners who came to settle in Japan has of late years been met by the introduction of milk breeds, such as Holsteins, Ayrshires, Shorthorns, Devons, and Jerseys. The Japanese favour the Holstein breed because they give most milk. Ayrshires come next in number. The Government of Japan arrange for lessons, lectures, and practical directions on the improvement, propagation, and management of cattle.

XUM

Opposition to the Mechanical Killer.

A few days ago a local authority in a district, which shall be nameless, had before them a proposal to adopt Model By-law 9B. Prior to the Council meeting, however, the energetic President, Secretary, and Committee of the Association most concerned had interviewed nearly all members of the Council, only three not being approached. In other words, they had lobbied the Council. They had put before the Councillors the views of the trade, backed up by the Birmingham Report, and as a result, when the matter came before the Council meeting, the members were voting upon a subject regarding which they had definite knowledge. The result was that the proposal was heavily defeated. Too often is it otherwise. The plan adopted is one that might well be emulated by all Associations in areas where they are troubled with this agitation.—*December* 19, 1924.

Compulsory Veterinary Inspection.

At the Sixth Annual Meeting of the Association of Midland Market Authorities held this year at Gloucester and reported in the *Cheltenham Chronicle* :—

Councillor Cole proposed that the Association urge upon the Ministry of Agriculture the necessity for the compulsory provision at markets of veterinary inspection. In doing so he pointed out that in Loughborough they had a veterinary inspector, and as a result of his activities they had kept out of their markets a good many diseased animals. In view of the new Tuberculosis Order the provision of veterinary inspection was very necessary.

Councillor Rose said he thought it to be most important that every possible means should be taken to root out tuberculosis from the herds of the country.

Councillor Pearce referred to the effective steps taken in regard to the inspection of stock and meat in America. He considered that the present steps taken to inspect cattle and meat were entirely ineffective.

Mr. Wallace pointed out that the law at present made it possible for by-laws to be adopted providing veterinary inspection, but they were local : authorities were not compelled to make them.

Personal

Congratulations to Dr. John W. Adams of Philadelphia on his unanimous election as President of the American Veterinary Medical Association.

Mr. Sidney Gilchrist Abbot, M.R.C.V.S., D.V.S.M., has been appointed Lecturer on Pathology, Bacteriology, and Protozoology at the Glasgow Veterinary College.

Mr. E. L. Taylor, B.V.Sc., M.R.C.V.S., D.V.H., has been awarded an Agricultural Research Scholarship under the auspices of the Ministry of Agriculture.

Mr. Daniel Cameron, M.R.C.V.S., has been awarded the James Tindal Post-Graduate Scholarship of the Royal (Dick) Veterinary College, Edinburgh. This scholarship is awarded annually to the most distinguished graduate of the year.

The following appointments have been made in the Colonial Service: R. Daubney, M.R.C.V.S., Assistant Chief Veterinary Research Officer, Kenya; W. I. Beaton, M.R.C.V.S., Veterinary Officer, Nigeria, Gold Coast; G. S. Cowin, M.R.C.V.S., Veterinary Officer, Tanganyika Territory; F. R. Hale, M.R.C.V.S., Veterinary Officer, Kenya.

The University of Utrecht, in Holland, has recently received the Government Veterinary School into its fold, and there is now a Veterinary Faculty with a duly elected President and Secretary. Professor Dr. de Blieck, the well-known and popular Professor of Pathology and Contagious Diseases, is the first veterinary surgeon to receive the honour of President, and the appointment is for four years; whilst Professor Schnoragel is the first Secretary.

Our congratulations are extended to the Dutch authorities for their wise foresight, and to our colleagues for their good fortune. Undoubtedly, from the point of view of status, as well as education, it is a step in the right direction, and one which will redound to the credit of the State, in that it will attract the best class of scientific student and worker.

Notices

VETERINARY COLLEGE AND RESEARCH INSTITUTE, INSEIN, BRITISH BURMA.

The Government of Burma decided some time ago to establish a Veterinary College and Research Institute for the study of the diseases of animals, and in the early part of the year the foundation-stone was laid at Insein by His Excellency Sir Spencer Harcourt Butler, G.C.I.E., K.C.S.I., I.C.S., the Governor. This project has been very materially helped forward by our *confrère*, Mr. Arthur Blake, F.R.C.V.S., D.V.H., for many years the Municipal Veterinary Officer of Rangoon. A short time ago a new position of considerable importance to the status of our profession in that country was created, namely that of "Veterinary Adviser to the Government of Burma," and our esteemed colleague, Mr. Arthur Blake, was the first to have the honour of the appointment. It bids good for our profession that these Institutes for the research and investigation of the diseases of animals are coming to the front, not only in England but in all parts of our Dependencies.

BOVINE TUBERCULOSIS COMMITTEE.

The following gentlemen have been selected as a Committee to test the value of Dr. Spahlinger's remedy as an immunising agent against tuberculosis of cattle. A number of calves, certified to be free from

tuberculosis, are to be inoculated with the preparation, and afterwards to be injected with doses of virulent tubercle bacilli. The result will be looked for with much interest by veterinarians and agriculturists, also by medical men and, indeed, by every class of the community: Commander J. Bayley, R.N. (Chairman); Mr. Ernest Craig, M.P.; Councillor Cumming, Mayor of Crewe (Hon. Treasurer); Mr. A. B. Gallagher, of New Zealand; Mr. H. German, Chairman of the Livestock Committee of the National Farmers' Union; Dr. W. H. Grace, M.B., Bacteriologist, Royal Infirmary, Chester; Mr. W. H. Hobson; Mr. J. H. Hughes; Professor F. Hobday, C.M.G., F.R.C.V.S., F.R.S.E., Hon. Veterinary Surgeon to H.M. the King; Mr. Pryce E. Hughes; Dr. J. B. Jeffs, Adviser to the Canadian Government in London; Mr. J. Q. Lamb, M.P., Secretary of the Non-Party Parliamentary Agricultural Committee; Mr. R. Goulburn Lovell, A.R.I.B.A., Geneva; Lieut.-Colonel Chas. Lyon, Chairman of the Cheshire Chamber of Agriculture; Mr. Jas. Macintosh, Principal of the National Institute for Research in Dairying, Reading; Sir Jno. McFadyean, M.B., B.Sc., LL.D., M.R.C.V.S., Principal of the Royal Veterinary College, London; Mr. J. Manuel, M.B., Ch.B.; Mr. Peter Manual, M.R.C.V.S.; Mr. R. G. Patterson, Central Chamber of Agriculture; Mr. J. Sadler, Secretary to the Cheshire Chamber of Agriculture; Mr. Henry Tollmacher; Major C. W. Tomkinson; Dr. R. T. Turner; Dr. T. Watts, M.P.; Dr. J. H. Williams, M.P.; Mr. T. Wilson, M.R.C.V.S.; Dr. Meredith Young, D.P.H., M.O.H. for the County of Cheshire; Lieut.-Colonel W. T. R. Houldsworth, President of Ayrshire Cattle Herd Board Society; Mr. W. B. Mercer, M.C., B.Sc., Principal of Cheshire School of Agriculture, Nantwich; Major C. W. Arnett (Secretary), 24 Lexham Gardens, London, S.W.

The following interesting paragraph appeared in the *Glasgow Herald* for September 17, 1925:—

At the monthly meeting of Milngavie Town Council on Monday night Bailie Paterson submitted a minute of the Public Health Committee dealing with the Diseases of Animals Acts, the Milk and Dairies (Scotland) Act, 1914, and the Tuberculosis Order, 1925. He stated that after full discussion the Committee unanimously decided to recommend that the Town Council should agree that a duly qualified person be appointed to act as veterinary inspector for the county and the burghs therein, his emoluments to be borne by the local authorities concerned. The Committee further recommended that the Council should hold over meantime consideration whether the veterinary inspector appointed should also act as veterinary inspector under the meat inspection regulations. The Council unanimously approved of the recommendations.

ERRATA.

In the last issue of the Veterinary Journal (the Special Public Health Number) the author of the article (page 431) on "Some Questions of Medical and Veterinary Interest" should have read: "Sir John Robertson, C.M.G., C.B.E., M.D., B.Sc."

In Colonel Nathan Raw's article on "Co-operation in Medical and Veterinary Research," page 443, the word "humanisation" of calves is obviously a printer's error for "immunisation."